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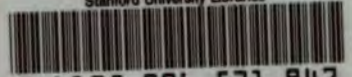
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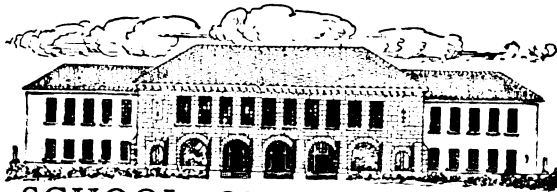
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THE PSYCHOLOGICAL CLINIC

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Orthogenes concerns itself primarily with the causes and treatment of retardation and deviation, but it is by definition the science of normal development, and comprehends within its scope all the conditions which facilitate, conserve, or obstruct the normal development of mind and body.

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AN EXPERIMENTAL STUDY OF THE SUGGESTIBILITY OF TWELVE AND FIFTEEN-YEAR-OLD BOYS.

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The study here reported is the first step in a research which seems to be forced upon the writer by a very definite need for knowledge on the subject. In clinical and educational work with under-average individuals, extreme suggestibility is an ever present problem. There is an immediate and urgent demand for educational methods which will develop a critical power able to cope with the strong suggestions playing upon an individual from all sides. Such methods must grow from a knowledge of the psychological factors involved in suggestibility and its causes, and this knowledge is still to be built up on a sound experimental basis. The term suggestion has been used with such diverse meanings,—been stretched by some writers to include so much that it loses all significance, while limited by others to abnormal phenomena,—that it seems well to state that for the purposes of the present study suggestion means a mental influence which causes the person influenced to think and to act without the guidance of his own reason. Persons peculiarly open to such influence are called suggestible.

The experimental studies thus far made on suggestion fall into two groups, those concerned with hypnosis, and those concerned with suggestion in the waking state. This study considers suggestion in the waking state only.

One of the first men to investigate experimentally suggestion in the waking state was the zoologist, Professor E. Yung, of Geneva. He believed (and all later experiments sustain his opinion) that suggestibility, in the sense used in this study, is common to all men. It might be said just as truly that an excessive suggestibility is common to most men. This fact is impressed upon us constantly by our contact with average as well as with under-average persons.

A couple of years ago, at the University of Pittsburgh, Professor O'Shea was invited to give a talk on what he considered the most

serious omission in the curriculum of the Pittsburgh schools. He gave a most illuminating talk, pointing out the utter lack in the course of anything that would tend to counteract the super-suggestibility of the young people. To illustrate this prevalent super-suggestibility he cited the incredible ease with which fakers lead their audiences to believe them capable of reading letters hidden in pockets, numbers hidden in watch cases, and events buried in the past or still more deeply in the future, and even to believe that dogs and horses perform arithmetical feats that would be impossible for a bright school boy. Professor O'Shea did not dictate a remedy, but he suggested one by explaining then and there, how many popular and baffling tricks are performed, and by incidentally stating that he was at that time threatened with suit for as much as he possessed, for destroying by such public explanations one faker's means of livelihood. Suggestion is clearly over prominent in the lives of both the average and the under-average individual. With the average person certain moral and ethical standards limit the realm where suggestion rules; with the feeble-minded these standards are absent, and in consequence, the most essential acts of life are but the blind realization of the suggestions of others.

With suggestion a dominant factor in conduct, it surely is important that those undertaking to guide the conduct of others find out as much as possible about this condition, about its causes and about methods of controlling it. The work so far published furnishes comparatively little information along these lines.

The experimental studies on suggestion in the waking state group themselves into the many studies on the psychology of testimony; and laboratory studies on the effect of suggestions of various kinds on sensation, on judgments of sensory stimuli, on motor ability, and on imagination. The studies in the latter group have been quite varied in character. The methods used are:—the production of hallucinations by the careful preparation of an expectant attention; the production of a variation in judgment by the presentation of a second stimulus either immediately before or immediately after the stimulus to be judged; the production of a variation in judgment by an expressed judgment of the experimenter; the production of a variation in judgment by suggestions of ability or inability; the production of a variation in motor achievement by suggestions of ability and inability; the production of a variation in imaginal activity by the presentation of an immediately preceding stimulus. The subjects have varied much in age, being drawn from primary and high school pupils, college students and teachers, and suggestibility has been found in persons of all ages.

Binet,² Yung,²² Guido Guidi,⁸ Vitali² and Small¹⁷ all consider suggestibility a function of age, finding that it decreases as age increases. Binet,² and Guido Guidi⁸ also consider it a function of school grade, and Lippman and Guido Guidi⁸ a function of culture.

Pearse,¹² Binet,² and Vitali,² all found that suggestibility increased with the repetition of the suggestion experiments.

Several investigators have endeavored to find out whether there is a correlation between suggestibility for different kinds of stimuli. Professor Scott¹⁴ using suggestions of color and of heat found a very low correlation and decided that the degree of suggestibility is related to the sense stimulated. Pearse¹² reached the same conclusion carrying it further. He concluded from his studies with visual, auditory, and tactual suggestions that there is a constant ratio between the degrees of suggestibility for the different senses. Pearse also finds that the highest degree of suggestibility for all the tests was attained by the same subject, an inevitable result if the ratio hypothesis is a true one.

Arthur Chojecki,⁴ also looking for correlations, used three tests, one suggested heat sensation, one suggested a magnetic influence, and one suggested a judgment of length of line. Sixty subjects were used, thirty men and thirty women. Twice as many subjects were influenced by the judgment suggestion as by the sensory suggestions. The two sensory suggestions were successful with the same number of persons but the persons were not the same ones in all instances. The men were more suggestible than the women.

A fact brought out in the studies of Binet,² Brand,³ and Bell¹ is that a suggestion often has an effect just the opposite of the intended one. If the suggestion "warmer" is given the stimulus is judged colder, if the suggestion "heavier" is given the stimulus is judged lighter. Were the suggestion ineffectual, the subject would be free to judge from the sensational content alone; in reality he resists the suggestion just enough to oppose it but not enough to ignore it.

MacDougal¹¹ writes of this tendency and considers it a transition state between uncritical acceptance and critical judgment. It is interesting to find this tendency toward negativism, which is such a constant factor of conduct in certain insane and feeble-minded types, so prominent in the reactions of average persons.

The present study is an attempt to discover something definite about the relation of suggestibility to age. It aims to find out whether there is any marked difference in the suggestibility of average boys of twelve and fifteen years of age. Forty twelve-year-old boys and thirty fifteen-year-old boys were used as subjects. Age and average performance in school were the only requirements.

Apart from these two constant factors the groups were quite heterogeneous, quite representative of the Chicago populace—the seventy boys represented many races and many social conditions. Some boys were pupils of the Glenwood Manual Training School, Glenwood, Illinois, which is a school for dependent boys; these boys, before their Glenwood experience, had enjoyed few if any environmental advantages. Some boys were attending the Grammar School at Hinsdale, Illinois, where the pupils are drawn from families of education and means.*

The conditions with the exception of the time of day and the place of testing were quite constant. The majority of the tests were made at the two schools mentioned. As the tests were all made by the writer who lived at a distance from the schools, it was impossible to keep the time of day constant. The personal equation, an important factor in suggestion experiments, was as constant as possible, all tests being made by the same person, who was a stranger to all the boys. Each boy was tested individually, and was put through the series of five tests at one sitting.

Five tests were used, all devised by Binet, all of the judgment controlling type. In two tests the personal element is practically eliminated—the suggestion is given by the arrangement of the test material; in two the suggestion is purely personal; and in one there is a combination of the suggestive arrangement of material with the personal element. This last is the test made familiar by incorporation in the “Measuring Scale of Intelligence.” The other four tests with tabulated results of experiments, are presented by Binet² in his volume entitled *La Suggestibilité*.

Binet's subjects were pupils of the elementary primary school, varying in age from seven to fourteen years, and pupils of the superior primary school, averaging sixteen or seventeen years of age. For test 1 of our series Binet used 36 subjects, 24 elementary school pupils, and 12 superior school pupils; for test 3 of our series Binet used as subjects 25 elementary pupils; for test 4 of our series he used 54 subjects, 42 from the elementary school and 12 from the superior school; for test 5 he used 35 subjects, 25 from the elementary and 10 from the superior school. As among Binet's subjects there were not many of any one age, his results do not give definite information concerning the degree of suggestibility usual at certain ages. They show in a general way that his older subjects were less suggestible than his younger ones.

* I wish to express to Mr. Leo A. Phillips, Superintendent of the Glenwood Manual Training School, and to Mr. Douglass, Superintendent of the Hinsdale High School, my sincere appreciation of the cordial and generous co-operation which made this study possible.

The results attained by any one individual, in the different tests are compared by Binet in a study of order of individual achievement in the large groups, or in smaller groups representing different grades of achievement. For instance, if subject A attained the highest suggestibility coefficient in test 1 and also in test 2 there would seem to be a correlation; if subject B's suggestibility coefficient appeared among the first ten in test 1 (number 2) and among the first ten in test 2 (number 9) there would still be a correlation, but one of less degree.

The limitation of subjects to two ages in the present study makes it possible to compare group instead of individual results. The first test in the series aims to influence the judgment of differences of weight, and to do this entirely by the suggestive arrangement of material. Fifteen wooden weights, alike in size and appearance, and conspicuously numbered from one to fifteen, are placed in a row. The first weight weighs 20 grams, the second 40 grams, the third 60 grams, the fourth 80 grams, the fifth and each succeeding weight 100 grams. The subject is told that we wish to find out how well he can judge of weights, and is instructed to lift each weight in turn once, with his right hand (if right handed), and to state for each whether it is heavier or lighter than, or just the same as, the weight that just preceded it. The habit of expecting a heavier weight each time is established by the time the fifth weight is reached, and suggestibility is measured by the number of weights in the last ten which are judged heavier. This is followed by a repetition of the lifting; this time the subject is allowed to lift the weights as often as he chooses. Finally, the weights are lifted for the third time, and the subject required to estimate the actual weight after being told that the first weight is 20 grams. Introspections are then brought out by questions and recorded.

Binet compared the results of the three trials and found the suggestibility decreased in the second and increased again in the third proceeding, and that it was greatest of all by the first method. The suggestibility was less with older children than with the younger ones. In adopting this test we limited the procedure to Binet's first series, a single lifting of the weights; we recorded no introspections* and we included as suggested judgments the judgments of "lighter," considering them due to suggestibility of the negative type. Binet discusses this point but finally excludes the negative judgments from the results. The writer feels strongly that they should be included, and the mathematical treatment of the results

* No introspections were recorded with any of the tests in the present series. It was Binet's practice to add the introspections.

seems to support this view, as the probable error, the probable error of means and the coefficient of variability are all reduced by including them.

The mean, the average deviation (A. D.), the standard deviation (S. D.), the probable error (P. E.), and the coefficient of variation (C.) have been worked out for the twelve and the fifteen-year-old groups. As the mean for each group is nearly six times its probable error both means would seem to be reliable. As the number of cases was but forty and thirty for the respective groups the probable error of means (P. E._m) or the probable error of the group mean compared with the mean for a very large number of cases, was computed by the formula $\frac{P. E.}{\sqrt{n}}$ which gave a P. E._m of about one-thirtieth of the mean.

The mean suggestibility for the twelve year group was 8.2 of a possible 10, and for the fifteen year group it was 7.5 of a possible 10. The difference in suggestibility was thus only 0.7 in favor of the fifteen year group. The probable error of this difference was also found by the formula $P. E._d = \sqrt{(P. E._{m1})^2 + (P. E._{m2})^2}$. The result was 0.341 which is less than half the difference. The difference is too small and its P. E. too large to indicate a definite age difference. The results are presented in table I, Group Results.

TABLE I.—GROUP RESULTS—AGE GROUPS CONTRASTED.

	TEST I		TEST I		TEST II		TEST III		TEST IV		TEST V	
	12 Year Group. Total Sug.	15 Year Group. Total Sug.	12 Year Group. Positive Sug.	15 Year Group. Positive Sug.	12 Year Group. Total Sug.	15 Year Group. Total Sug.	12 Year Group. Suggestibility.	15 Year Group. Suggestibility.	12 Year Group. Co. Greatest Positive Sug.	15 Year Group. Co. Greatest Positive Sug.	12 Year Group. Total Sug.	15 Year Group. Total Sug.
Mean...	8.2	7.5	7.0	6.5	2.0	1.0	1.2	0.5	142.0	128.0	31.3	30.0
A. D....	1.825	1.56	1.97	2.06	0.85	1.0	0.82	0.63	21.9	13.8	9.57	7.3
S. D....	2.287	1.955	2.44	2.58	1.065	1.2533	1.02	0.789	27.44	17.295	11.994	9.149
P. E....	1.54	1.318	1.647	1.74	0.718	0.8453	0.687	0.532	18.50	11.665	8.089	6.171
C.....	0.27	0.021	0.346	0.397	0.532	1.2533	0.85	1.579	0.193	0.135	0.383	0.304
P. E. _m ...	0.243	0.240	0.260	0.317	0.113	0.154	0.108	0.097	2.92	2.12	1.27	1.12
D. M.	0.7		0.5		1.0		0.7		14.0		1.3	
P. E. _d ...	0.341		0.419		0.191		0.148		3.6		1.69	

The second test in the series is that used in "The Measuring Scale of Intelligence." The results are here treated quite differently in order to make them comparable with the results of the other tests of the series. The test aims to influence the judgment of

the length of lines. Six pairs of lines are used, each pair drawn on a separate card. The lines are drawn in line with each other and one centimeter apart. The first pair measure four and five centimeters each, the second pair five and six centimeters, the third pair six and seven centimeters; the longer line in all three cases being drawn to the right. All the lines on the last three cards measure seven centimeters. The subject is shown each pair separately; as he is shown each of the first three pairs he is asked "Which is the longer line there?" and as shown each of the last three pairs "And there?"

In scoring this test for the "Intelligence Scale" resistance to suggestion is recorded, not suggestibility, and resistance is credited whether two or three of the equal pairs is judged correctly. In order to compare the results with the results of the other four tests in this study it is necessary to record suggestibility, not power of resistance, and also to credit each response.

It is interesting to note that in both the twelve and fifteen year groups, the line to the left in the last pairs was judged "longer" more than twice as often as the line to the right. That the judgment of "longer" for the line to the left is a negative response is not quite clear. Two suggestions are given by the test, a personal, verbal one of difference in size by the words "Which is the longer line?" and one of position by a suggestive arrangement of material which establishes a habit of choosing the line at the right as the longer. It may be that in the left line judgments the personal, verbal suggestion of size holds, while the material suggestion of position does not. In either case the left judgments are suggestions and are counted as such. They are implicitly so counted by Binet who accepts nothing but equal judgments as resistances. In the treatment of the results obtained from the use of this test, in the manner already described for test 1, it developed that the P. E. is so large for each group that the group averages are practically worthless. The results of test 2 are therefore omitted from our final comparative analysis. The results are presented in table I, Group Results.

Test 3 aims to influence the judgment of the length of line, this time by a purely personal, verbal suggestion. A series of 24 parallel vertical lines are drawn from a base line on a piece of paper. The shortest of these lines measures 12 millimeters and the longest 104 millimeters. The lines are arranged from left to right on the paper each one being 4 millimeters longer than the one to the left of it. These lines are plainly numbered from 1 to 24. On separate cards three other lines are drawn, one like line 6 of the

series, one like line 12, and one like line 18. The subject is shown the line like line 6, allowed to look at it for several seconds, and then is asked to pick out from the series of lines the line of the same length. When he has finally determined upon one, the experimenter says, "Do you not think it is a little longer, as long as this next line?" If this suggestion succeeds the suggestion is repeated with the next longer line. The entire proceeding is repeated with lines 12 and 18. The mathematical treatment of the results obtained from the use of this test again shows such large probable errors that neither of the group averages is reliable; they are therefore omitted from the final analysis. The results are presented in table I, Group Results.

Test 4 also attempts to influence the judgment of length of lines, but by the arrangement of material only. The method is the same as that of test 1, lines being substituted for weights. A series of thirty-seven lines are shown, one at a time. The first line measures one inch, the second two inches, the third three inches, the fourth four inches, the fifth and each of the succeeding lines five inches. The subject looks carefully at a line, estimates its length, and indicates this length by placing a dot at the proper distance from a margin on a sheet of quadruled paper. He is then shown another line, and the process repeated until the last of the thirty-seven lines has been judged. It is assumed that the habit of expecting each succeeding line to be longer will be established by the time the fifth line is estimated. Not only can one tell by the record the number of times the suggestion has held, but one can also measure the lines and discover the amount of the suggested error.

Binet's method of treating the results is to measure the estimate of line 5 and also measure the longest estimate in the series, multiply the latter by 100 and divide by the former, and thus secure a coefficient of suggestibility. By this method 100 indicates an absence of suggestibility, and this must be remembered in judging of the significance of the probable error. Binet's method is followed in this study. In addition the length of each of the thirty-two estimates was measured, and a coefficient of average positive suggestibility, a coefficient of average negative suggestibility, and a coefficient of average total suggestibility (positive-negative) calculated. Binet's coefficient of greatest positive suggestibility seems to be the best index of suggestibility, as it is the only one whose probable error is small enough to justify its use. It may be questioned whether this P. E. is small enough (a little more than one third the mean. The coefficient of greatest positive suggestibility for the

twelve-year group is 142 (P. E. 18.5), that for the fifteen-year group 128 (P. E. 11.6). The difference in means is quite large—14. Its probable error (P. E._m) is 3.60. It seems correct to infer that there is an age difference in favor of the fifteen-year group for this test. The results are presented in table I, Group Results.

Test 5 aims to affect the judgment of length of lines by a purely personal suggestion. Forty lines are presented to the subject one at a time, and he is directed to indicate their length on quadruled paper just as in the previous test. Each of the forty lines is five inches in length. The first line is presented without comment, just before showing the second line the experimenter says in a casual way "The next line is a little longer," and before showing the third, "And the next is a little shorter." These remarks are repeated, longer and shorter on alternate lines, until forty have been shown. Binet used only eighteen lines. He recorded the estimated length of the first line, and the differences in the estimated length of succeeding lines, noting whether the difference was or was not in accordance with the suggestion given; he also recorded the number of resistances. He called resistances, not only a judgment of "equal" but also all judgments which were the opposite of the suggestion. This is contrary to his practice in test 2, where only equal judgments were considered resistances. The writer is strongly of the opinion that the contrary judgments are suggestions of a negative character, and by so considering them the probable error is again materially reduced. Binet finds by averaging the errors for each line separately, that the group of children of the elementary primary school made less errors on the last lines than on the first, but that this did not occur with the group made up of children from the superior primary school. This difference between the group results he accounts for by the fact that the older children made more accurate judgments from the first. Binet finally established his classification upon the number of resistances, explaining that the measure is a conventional one. With his subjects of the elementary primary schools, 25 in number, the resistances range from 0 to 14, with the pupils of the superior primary school, 10 in number, the resistances range from 0 to 12.

In the present study the estimated length of the original line has not been recorded, neither have the differences in amounts of the suggested error with the succeeding lines. The judgment of each line is recorded by a plus sign if it follows the suggestion, by a minus sign if it contradicts the suggestion, and by an equal sign if it entirely ignores the suggestion and estimates the line as equal to the preceding line. The number of suggested judgments are found by adding the plus and minus judgments. The mean, the

A. D., the S. D., the P. E., the C. and the P. E._m have been calculated for each age group for positive, negative and total suggestibility, and the D. M. and P. E._d have also been calculated for both kinds of suggestibility as well as their sum. Negative or contrary judgments are more frequent among the fifteen-year-old than among the twelve-year-old boys, but the probable errors are so large that they invalidate any averages. The probable error is proportionally smaller for the positive suggestion averages, but only when positive and negative judgments are combined are the probable errors reduced sufficiently to support the means in a claim to consideration. The total suggestibility for the twelve and fifteen-year-old groups is 31.3 and 30 respectively. The small difference of 1.3 in favor of the fifteen-year-old group has a P. E._d of 1.69 which, of course, invalidates it. There is practically no age difference for the two groups in this test.

In the present study 40 lines were used instead of 18 and an attempt was made to ascertain whether the force of suggestion increased or diminished as the experiment progressed. The number of suggested judgments on each of the thirty-nine lines for each group was found, and curves plotted for these sums. It was seen that 35 of the 40 subjects in the twelve-year group succumbed to the first suggestion and 31 to the last, and that the number varied between, never rising beyond 36 nor falling below 29. The curve for the fifteen-year group showed that 24 of the 30 subjects yielded to the first suggestion and 23 to the last. The number fell to 20 on the ninth line and rose to 26 on the twenty-sixth and thirty-first line, never exceeding these limits. Repetition in this experiment seemed to have little effect upon the force of the suggestion.

Curves representing the number of suggested judgments on each of the last ten weights in test 1 for each group were also plotted. Of the twelve-year group 31 of 40 proved suggestible on weight number 6 and 33 on weight number 15. The limits were 29 suggested judgments for weight 10 and 36 suggested judgments for weight 8. Of the fifteen-year group 20 of 30 subjects were suggestible for both weight 6 and weight 15; the limits were 19 suggested judgments for weight 6 and 26 for weight 10. Not one of the four curves plotted indicates that repetition either increases or diminishes the force of a suggestion.

The sifting out process has left results which seem reliable from three of the five tests used, tests 1, 4, and 5. An age difference in suggestibility is indicated in only one of these, test 4. To discover whether suggestibility for one of these tests indicates suggestibility for the others, the twelve and fifteen-year groups for each test were

merged into one group of seventy subjects, and the correlation coefficients for tests 1 and 4, tests 1 and 5, and tests 4 and 5 were calculated by the "Product-Moments" Method of Pearson ($r = \frac{\sum xy}{n \sigma_1 \sigma_2}$). The probable errors of each of these coefficients were also found— $(P. E._r = 0.6745 \frac{1-r^2}{\sqrt{n}})$.

The results are:

Tests 1 and 4.....	$r=0.085$	$P. E._r=0.079$.
Tests 1 and 5.....	$r=0.043$	$P. E._r=0.080$.
Tests 4 and 5.....	$r=0.448$	$P. E._r=0.064$.

The only coefficient with a sufficiently small probable error is that between tests 4 and 5.

It is of considerable interest that the only correlation coefficient found is that between two tests which, while they both aim to produce a variation in judgments of visual stimuli, differ profoundly in method of effecting the suggestion. In test 4 the suggestion is made simply by an arrangement of material, in test 5 it is made by a verbal suggestion of the experimenter. On the other hand there is no correlation between the results of test 1 and test 4 in which different sense fields are involved, although the method of effecting the suggestion depends entirely upon a similar arrangement of the material in the two tests. This lack of correlation might be partly due to the fact that the amount of suggested error is considered in scoring test 4 and is not considered in scoring test 1. To eliminate this difference test 4 was scored by the same method used with test 1, ignoring entirely the amount of suggested error, and calculating the correlation coefficient on this basis. There was still an absence of correlation. These findings are in accord with those of Scott and of Pearce, that there is a relation between the degree of suggestibility and the sense stimulated.

The results of the present study lead to the following conclusions:—that average boys of twelve and fifteen years of age are highly suggestible; that the difference in suggestibility due to the age difference between twelve and fifteen in average boys is slight; that to secure an estimate of an individual's suggestibility it would be well to use a series of tests each effecting the suggestion through stimulation of different senses; that repetition has little if any effect on the strength of a suggestion.

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THE USE OF METHODS AND DEVICES.

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The special teaching which is being done by the writer aims to discover why children do not get on in school. It endeavors to stimulate them to succeed, and especially to help the defective and deficient.

Often the pupil continues in school but is tutored out of hours to keep him up with his classes. This is frequently done at the recommendation of the teacher, who is not supposed to do tutoring in addition to her regular school work. In such cases the teacher sends a written statement of what the child lacks, what sort of work he is doing in school, and what he is expected to cover in that term's work. At first she sends a daily statement of lessons but after the first week it usually fails to be sent. It would be difficult to determine whether she loses interest, or thinks the special teacher can run alone on her own responsibility, or whether she considers the teaching amounts to so little it is a waste of her time to send statements. At all events she accepts the word of the special teacher at the end of the term that all the ground has been covered which she designated. and we infer that the pupil showed improvement in his school work. Sometimes the special teacher has the entire training of the child when he is unfit to be with normal children in school.

First it is necessary to find out how little or how much the pupil knows and wherein lies the trouble. There are various ways of ascertaining this. When one means is unsuccessful another is tried. Usually the first or second written lesson shows the deficiencies but not always. Some children at the first lesson appear brighter than they really are, for they throw all their energies into making a good impression. Some are not accustomed to doing written work and hesitate over it. Some are nervous or excited in oral work, especially in reciting to a stranger and do even worse than usual. Also sometimes they feel that the report given of them by teacher or parents when they were consigned to the tutor's care, showed them as hard cases who could not or would not learn. Naturally they are depressed by this feeling. To win the child's confidence first, then to teach him to have faith in his own ability and to respect himself is the work of the teacher.

After years of experience one naturally looks for physical defects

that might cause the trouble when the child does not get on well at school. Often circumstances are found not conducive to study.

Children who go auto-riding or upon long pleasure excursions all day Sunday are unfit for work Monday. They are, as they themselves express it, "just dead," that is they are tired out and the brain is sluggish. Their fatigue affects their memory. They are irritable and easily get into quarrels. They have to drive themselves to work, sometimes even their writing is shaky, like that of an elderly person. Driving oneself or being driven by a teacher is not conducive to good work, and little is accomplished. The child might just as well be sent home to rest or play. John used to come to school on Mondays completely used up. It was discovered finally that his Sunday afternoons were given to long drives in the car, followed by visiting and a heavy dinner. The strain told.

Evening performances of all kinds and late hours, especially when the child has taken part in the entertaining, tend to lower the standard of work he can do next day. It may sound severe, but a child ought not to be out in the evening at all during the school week. Of the "movies"—judge for yourself! It is not easy to convince parents that these activities have anything to do with poor lessons. They think the teacher is to blame if the child is not promoted, or the school board that devises too much work for their sensitive darlings. Here is a case in point. Mabel was not a poor student, in fact she could do fair work if she put time enough on it, but her mother had social ambitions. Night after night Mabel had to be driven to some church or social function that she might catch a desirable husband, for Mabel was in the High School. She begged to be allowed to stay at home to study, but pleadings were of no avail, she had to go or there was a scene. The mother called her an ungrateful, selfish child to be unwilling to further these worldly ambitions. Consequently Mabel barely made her grades, and the mother declared favoritism was shown by the teachers, for her daughter was as bright as the honor students. The years have passed—Mabel is unmarried and with no definite profession, but having to earn her bread.

Is there any known method of bringing the child to study profitably? Surely many of them. Of necessity the method varies according to the age, grade, and mental capacity of the child, also according to what is expected of him. If he is to keep up with a class in school, the work must conform somewhat at least with that being taught there. With the defective, many devices are necessary and infinite patience on the part of parents and teachers over slow advances.

This being a specialty in teaching, the great point is to arouse interest by any method or mixture of methods. These are read about in magazines and books, then subjected to experiment. After a time one gets to know what is most likely to succeed but it is always well to watch for new suggestions.

One idea becomes prominent in dealing with those children who have fallen behind a class,—*that a lesson given to be done, must be done.* Work carried home to be done, brought incomplete with the smiling statement “I didn’t do it, I didn’t have time” or “I didn’t know how” or “I went over to Jean’s house and we got to playing games so I forgot my lessons” must be done for the next day before anything new is taken up. One educational writer says the trouble is that children do not know how to obey, to do exactly what they are told. Never having to obey at home, they cannot do it at school. Generally speaking there is not very much use in sending work home to be done. It had better be done under the teacher’s eyes, then we can avoid a great deal of waste in time and energy.

Some children will lose their lessons. Bertha is good girl but she loses her papers, she never knows what lessons were assigned. She forgets what was said or loses the pages she had marked. She is not sufficiently interested to remember the connection between tomorrow’s lesson and today’s, so as to be able to find it in the book. She is a trial—all teachers have seen her. She has not yet conquered her proclivity to lose things—her books, her sewing, her purse, her rubbers—she never knows where they are, but she is trying. Her mother has the same failing of losing and letting things go half finished. Can we blame the daughter? Loose papers are fastened to her history by means of patent-fasteners, and unless she loses her history, which is not improbable, they are there. In time we hope to teach her to take care of her possessions.

In sharp contrast is Felicia, a little defective, who puts away all her materials before she goes. If she takes home a book, she remembers to bring it back next day. She never forgets material affairs, only her lessons, for her deficient mind cannot retain them.

The task of the special teacher is to teach the child “to get a grasp on his work” as one principal expresses it. The teacher who has just graduated, or been at work only a few years, or who never investigates but keeps on doing the same thing year after year, will tell just what to do and how to do it. But where one has been experimenting and testing, say, for twenty years and has run up against all kinds of snags in the way of children and parents, one realises how little is known about the much discussed “child-study” and how much has yet to be learned. Many of the books written upon

this inexhaustible subject do not seem to throw much light upon it. "The Backward Child" by Barbara Spofford Morgan gives many excellent devices and tests which, as she says, "do not require elaborate material nor involve unusual methods. They are intended to utilise the things that a child does every day and to make them serve the purpose of building up the mental faculties in which he is weak." She also states that any single kind of training is not a cure-all,—“The individual difficulty is the thing and any device, fantastic or obvious, which tends to remove that difficulty is the only cure worth considering.”

With each individual the method may have to be different. A visitor was present when a deaf mute was brought by her mother to see if she could be taught anything. The visitor heard much of the conversation with the mother. After they had gone, she became insistent to know what we were going to do, how we would begin the lessons. She was told, much to her disgust, we did not know, it would depend entirely on how the thing worked out. With the troubled child the first point is to become acquainted so he will be at his ease with the teacher. The plan of operation works itself out. When one thinks of the multitude of things there are to do to interest a child, it would not seem hard to find something with which to begin. Different things are tried until one fits the case of this particular pupil.

The special teacher has many books on all subjects, primers, readers, histories, arithmetics, English books—language and grammar proper. She has blocks, cards, colored paper, beads, crayons, dominoes, spelling books, sets of letters, toothpicks, pictures, puzzles, a great variety of things and is getting more all the time.

Children like to make something to illustrate their idea—draw pictures or cut paper—to help express their meaning, their words seem to them inadequate. Sometimes these illustrations are grotesque and totally unlike the reality, but they seem to convey an idea in the child's mind. Sometimes if they portray some object with which the pupil is unfamiliar, the teacher may discover wherein lies the wrong impression given by the description the child has heard. One of the funniest things ever seen was a set of drawings by a class of city children, many of them members of an orphanage family, showing a carrot, tops and tiny roots. Most of them knew a carrot only as seen in the markets, the results were queer yellow and green vegetables.

The child's sense of proportion is also often sadly at fault. A little pupil was asked how large a playmate was. She said, as large as a paste-board box which had held stockings. One did not need

to see the playmate to know this was no comparison. After a little training in relative sizes, she could get it much nearer right. Little children may draw illustrations in their writing lessons, generally balls, and color them to learn the colors. They may be crude but when the child can get one fairly round, she is proud of it. There's nothing like a child's imagination to help out reality.

Sometimes when the pupil has had previous instruction it is advisable to take away the book with which he is to a degree familiar, and has studied with only a partial understanding and substitute an unknown book, because he may say when you designate a lesson, "Oh, yes, we had that, I know it" and so fail to study it, though he does not really know it thoroughly. You cannot interest him in it as you can in a new lesson though the new one is the same lesson with a new setting. This is especially true of language work.

Arlene was a pupil during school vacation time. When asked to write a story about a picture or from an outline of a composition, she could not originate anything, but only write what the teacher or her schoolmates had said in class the term before. A book was substituted, which she had never seen. Oral instruction, if things can be told in a way to hold the child's attention, is often helpful for new words or names can be explained and illustrations taken from common things he has seen.

No one has ever been able to explain why children prefer stories about animals, especially those supposed to talk, to tales about real children. With the paper-bound books furnished by many educational publishing houses at five and ten cents each, one may get plenty of supplementary reading of the best quality. Current magazines often have pretty stories, too, and attractive pictures.

Do not think because you like a book the child must perforce enjoy it. Tastes differ in persons of a like age and a child's opinion differs greatly from that of a grown-up, because of development and literary transition. Some stories have never been known to fail to interest. When the reading must be very simple, the children, especially the deficient ones, prefer "The Three Bears" to anything else. They read and reread it, yet they seem to never tire of it. Next perhaps comes the story of the "Goose that laid the Golden Eggs," which varies considerably in the telling, and one child adores "Mother Hubbard."

Charles B. Gilbert says that school readers contain much "silly, idle thoughts," that do not really train the child mind at all, except in learning the words. One of that variety appeared not long ago, such a jumble of words without any definite story was never met before. One was about a boy who went out and sat "on a wet,

mossy rock," naturally he caught cold. "I think he was a silly boy," said the little defective pupil, "anybody would know better than that."

Mr. Gilbert continues that there is "an abundance of available material in the natural activities of children and in the delightful field of children's lore to equip any primer builder. Reading books from highest to lowest, should satisfy the two main desires behind all voluntary reading, getting information and finding enjoyment and inspiration. . . . Children should come to look upon a book as a treasure-house to be approached with glad anticipation."

When one compares the old school and reading books of our ancestors with our modern works of art called readers, compares especially the famous New England Primer with its crude illustrations in which you could almost tell a tree from a man, it seems wonderful that any child felt interest enough in reading to persist in it. Yet one can get excellent results from a reader absolutely unillustrated—it is far better than one with pictures that do not tally with the reading matter, for children are quick to detect these incongruities.

Standing before the book-shelves in our public libraries, we see the multitude of books upon child life and training, upon methods, upon every phase of the child problem, realise, too, the vastness of the subject. And yet, it may be questioned whether we are going to make, with all our investigations and our methods and devices in general, better men and women than those who absorbed education in the primitive "little red school-house," or the log cabin of the decade before. Some one has said,—“Discipline of mind and character is the first object, all else is secondary to character building.”

One thing we may strive to do, assisted by the physicians, to deal wisely with the backward, the defective, the wayward; through a knowledge of his physical and mental misfortunes train him as far as possible to cease to be a burden to the community and to find some joy for himself in life.

EXPERIMENTING WITH CHILDREN UNDER THE GARY PLAN IN NEW YORK CITY

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To say that New York City has been experimenting with the Gary plan of school organization during the past year probably suggests "carrying coals to Newcastle" or in current terms "carrying steel to Gary." The net outcome of the employment of Superintendent Wirt by the Board of Education during the school year just closed, has been an increased interest in school matters by the parents at large because of the propaganda carried on in different newspapers, an incomplete demonstration of the work, study, and play program in two schools,—P. S. No. 45, located in the Borough of the Bronx, and P. S. No. 89 in the Borough of Brooklyn,—together with a paper organization for a group of additional schools in the Bronx, several of which have recently begun to operate although with inadequate equipment. In order that the schools thus organized may have the benefit of Superintendent Wirt's personal supervision, he has been re-engaged for the current year, not by the Board of Education but by the Board of Estimate and Apportionment, which claims to see in the plan a means of effecting certain economies.

Disregarding certain political aspects of the controversy due to the attempt of the city administration to arrogate to itself a control over educational policy for which there is no warrant either in the statute law or the legal decisions of the state, a brief survey of the situation and a statement of the mooted points in the plan may be of passing interest.

As the records of Bluffton, Indiana, show no novel features of school administration other than a short lived attempt to lengthen the school year, it may be assumed that Superintendent Wirt developed his theory of duplicate school organization after his appointment in Gary, Indiana, that unique town created in 1906 by the decree of the United States Steel Corporation at a cost of \$75,000,000. During the past ten years there has been developed in three of the nine schools in Gary (the Emerson, the Froebel, and the Jefferson), a type of organization which has aroused curiosity, commendation, and condemnation because of such features as

(a) Enriched equipment, including shops, playgrounds, auditoriums, studios, swimming pools.

(b) An alternating or duplicate school program permitting, and in fact necessitating, the accommodation of two schools of a twelve years' span in one building.

(c) A type of program which in terms of time and subject distribution enables the pupils to attend school at such times as will best conserve the co-ordination of the school and related social agencies such as the home, the church, the library and private teacher.

(d) An alleged reduction of cost in equipment and maintenance insuring a twelve months' school year, a longer school day, prevocational and vocational training and a co-ordination of social agencies at a cost either equal to or less than the current cost in well organized school systems of admitted efficiency.

As a result of a cursory inspection of the Gary schools by the Mayor and the President of the Board of Education of this city in June, 1914, Superintendent Wirt was employed to advise concerning the feasibility of securing prevocational training for all pupils by means of a wider use of school facilities. After considerable vexatious delay, Superintendent Wirt was assigned to reorganize two schools already mentioned in which the congestion tended to make advisable a duplicate organization such as is essential to the operation of the Gary Plan. To date both these demonstration schools are inadequately equipped to permit a real demonstration of the so-called work, play, and study program. Moreover the group of twelve schools in the Bronx, several of which have just begun to operate under the program, have not yet been completely equipped with the very limited additional play space, auditoriums and shop equipment which Superintendent Wirt has planned.

What then shall be claimed for the experiment to date?

The consensus of professional opinion is that the alleged economies and the pedagogical merits of the plan are still open to serious question. For example, a committee of the Teachers' Council representative of all the teachers in the city and a Committee of Principals representing the principals of the city both reported that in view of the incomplete character of the experiment, it would be inadvisable to attempt either to pass final judgment on the plan or to make the so-called demonstration the basis of a claim for an extension of the scheme. While a real contribution to duplicate school organization, the Gary Plan has yet to demonstrate to the satisfaction of professional educators its stability, economy, and effectiveness when subjected to the exaction of conditions as they exist in New York City.

The instability of the plan is such that many are seriously perplexed as to just what are its basic administrative features. Thus in

Superintendent Wirt's report to the Board of Education of July, 1915, and in a public address delivered in June of that year, Superintendent Wirt advocated a teacher for each class in the school organization; two principals in each duplicate school; 120 square feet of play space per pupil; co-ordination of school and church by means of a certain method of programming the school day; and prevocational training through maintenance work done in connection with the school plants. More recently he estimated that the city system could be reorganized on the basis of his program in six month's time at a maximum cost of \$6,000,000.

At the present time he either specifically recommends or his practice and plans conform to the following: He saves 10 per cent of the number of teachers hitherto employed; asks for one principal in each duplicate school organization even though that be in excess of 3000 children; plans for only 40 square feet of play space per pupil; states that the co-ordination of school and church is unessential and possibly inadvisable; and provides industrial training but does not limit it either in amount or method to the opportunities such as a maintenance plan can afford. Although the Board of Superintendants has not yet submitted a final report on the problem of the cost of the re-organization of schools in congested districts on the work, study and play program, it is stated on good authority that the estimated cost of such changes will be \$15,000,000.

Such kaleidoscopic changes in the fundamental aspects of the scheme, recommended by certain zealous advocates as a panacea for school ills and recommended even by the Mayor and the Controller as a basis for the re-organization of the entire New York school system, make the judicial reflect on the possibility of the irreparable damage that may be done through a chaotic reconstruction based on a relatively novel plan of school organization that is as yet untried in a school system of any city with a population of 300,000 inhabitants.

Open to serious dispute are the economies alleged to be possible under the Gary plan. No sane person will hold that economy is out of place in school management. If, however, economy means placing the dollar above the needs of the children, educators who fail to enter a vigorous protest are recreant to their duty. It is important to examine the economies which are said to be possible. These are—

1. Two schools may be housed in one building. Apparently this saves part of the cost of an additional site and building and results in a decrease in the cost of maintenance.

2. The duplicate school organization may be administered on the basis of the "Model 72 Class Program" which requires but one principal and permits a 10 per cent reduction in the teaching staff.

This reduction is made possible by massing pupils under a limited number of teachers in the auditorium and the playground, by distributing class units as monitors, as teacher assistants, or as pupil helpers in the shops and laboratories and by sending classes, for part of the school day, to various neighborhood agencies.

3. The school equipment may be maintained in proper repair through the joint labor of the shop teacher, and pupil assistants. By this device the salary of the instructor is offset by his productive work and is therefore not a salary charge but a charge against the fund for the maintenance of building and equipment.

4. The school day is lengthened one hour or 20 per cent without additional cost and with a reduction in the number of teachers.

5. Such agents as truant officers and home visitors may be dispensed with and the work of investigating truancy and unsatisfactory conditions affecting pupils' welfare can be assigned to teachers.

It is aside from my purpose to argue the converse of these propositions at any length, but I will suggest the following facts:

1. Superintendent Spaulding of Minneapolis found, despite the low wage given to both teachers and principals, despite the maintenance plan of industrial training and the various other devices already enumerated, that the *per capita* cost of schooling in Gary as the schools were being operated at the time of his visit was 38 per cent higher than in his own system.

2. According to Superintendent Wirt's frank admission the "Model 72 Class Program" is the fruit of fifty earlier programs originated during the past ten years. The acceptance of it involves features, which although apparently economical may be expensive indeed if interpreted in terms of child life. Up to the time the program was presented Superintendent Wirt had very limited experience with a type of unit school large enough to permit the use of a "72 Class Program" and the reduction in the number of principals, teachers, and accommodations are based on theory rather than practice. Furthermore, part of the plan calls for the vacation of 200 old buildings and the resultant introduction of duplicate schools in organizations already too large. Such radicalism suggests that due consideration be given to Professor McMurry's recommendation in the "Report of the Committee on School Inquiry" that the present tendency to increase the size of schools should be checked and a desirable size should be agreed upon for the future, possibly not exceeding approximately thirty teachers. Superintendent Wirt himself admits "that cities can finance adequate work, study and play programs, only when all the facilities of the community for the work, study and play of the child are properly co-ordinated with the school." He admits more-

over that since the independent social agencies represented by the libraries, churches, and settlement houses are not yet co-ordinated with the school, all classes programmed for out of school periods must necessarily be accommodated by the school itself even though an increase in cost is thus involved.

3. None of the schools re-organized by Superintendent Wirt are making any serious attempt to apply the maintenance scheme so as to provide prevocational training and at the same time keep the school in proper condition. In all cases the salary of the shop instructor is a charge against the general salary fund.

4. In the schools in which the operation of the longer school day has been observed, it is obvious that the time lost through departmental changes within and without the building more than offset the additional hour. Moreover the additional hour is practically on an optional basis and when the facilities are not ample or do not meet with the approval of the parents in the neighborhood, the retention of the children at home has led to a reduction rather than a lengthening of the school day.

5. The substitution of the teacher for the trained social worker, either truant officer or home visitor, is in keeping with other suggestions whose value has never been proved.

Many of the educational features of the Gary plan are either novelties in elementary education whose value is unknown or features concerning the value of which school men are in serious doubt. The proposed innovations to which most serious objection has been raised are the following:

1. The constant use throughout the school day of all parts of the equipment such as gymnasium, swimming pool, auditorium. However desirable it may be to have these facilities it does not necessarily follow that it is best for the pupils to use them at all hours of the day. For example: the assignment of a first grade class of six year old children whose day begins at 8:30 to the playground for the first period and to the auditorium for the second period would seem to be emphasizing the use of the equipment at the expense of the real needs, mental and physiological, of the child.

2. The departmental plan of teaching for all grades, involving approximately forty minute changes of teachers, room, and subject matter for all pupils including the little tots of the lowest grades, in a school day extending from 8:30 to 3:50. Extended experience in the schools of this city with a departmentalized scheme of instruction limited to the mature pupils of the 7th and 8th school years has not led to a general adoption of the plan because of such generally recognized limitations as lessened disciplinary control, lack of personal

influence and overemphasis on instruction in subject matter at the expense of those finer influences that really constitute the art of teaching.

3. The assignment of pupils for extended daily periods as monitors in halls, auditoriums, and classrooms in order to effect certain economies in the teaching force. May it not be argued that the value of such assignments as contrasted with intensive instruction under a skilled sympathetic teacher is certainly a matter open to debate.

4. The promiscuous grouping of younger and older children who work in auditorium, laboratories, and shops in spite of the obvious difficulties of securing seats capable of accommodating both a first grade child and an eighth grade child, and the desirability of having homogeneous pupil groups to insure economy in the instruction process.

5. The paternalistic scheme of extending the school day of all children young and old from 8:30 to 3:50 and compelling the pupils of the so-called second or Y school to do intensive mental work late in the forenoon and late in the afternoon. The crux of the duplicate school problem is the Y school which must be proven to be the equal or superior of the ordinary well equipped single type of school. If all our experience shows that the best time for doing intensive mental work is not only between the hours of 9:00 and 3:00 but also the best time within these limits is the early morning and the early afternoon: mental work late in the morning and late in the afternoon is at a disadvantage. Again, any duplicate school organization based on the slogan that "Each parent can have the kind of school he wants" conceals the specious assumption that 50 per cent of the parents will choose the Y school, a choice hardly possible as soon as they become aware of the limitations of the Y program.

6. The device of dividing the school year into semesters during which special subjects are taught for a third of the year and then dropped for the remainder of the year, is a novelty in elementary education, the value of which has yet to be proven.

7. The substitution of outside activities in the home, church, studies of private teachers, social centers and libraries as equivalent to regular school activities, although such agencies are beyond the control of educational authorities.

8. The substitution of casual, unorganized shop instruction based on the maintenance theory for the type of organized, sequential instruction given to mature children in the vocational and prevocational schools throughout the country, in most of which productive work is done, but in which the doing of jobs is incidental to the instruction and training of pupil workers.

Despite the fact that the consensus of opinion is that sufficient time has not elapsed to permit a proper evaluation of the work in the two schools that Superintendent Wirt organized, City Superintendent Maxwell assisted by his chief statistician, Mr. Burdette Buckingham, conducted tests in March and in June, 1915, which included the two schools administered on the Gary plan and a group of so-called control schools organized in the ordinary way. The examinations were in fundamental subjects: arithmetic, spelling, English, grammar, geography, and history, and were intended to test the increment of progress made by the pupils between the dates indicated. The results are given in the following tabulation:

IMPROVEMENT IN ALL SUBJECTS BY GRADES.
BASED ON THE NUMBER OF PUPILS WHOSE SCORES WERE BETTER IN
THE FINAL THAN IN THE INITIAL TEST.

Grade	GARY SCHOOLS			CONTROL SCHOOLS		
	Pupils in both tests	No. who improved	Per cent who improved	Pupils in both tests	No. who improved	Per cent who improved
7A.....	1,541	839	54.4	4,702	2,824	60.1
7B.....	1,366	770	56.4	4,114	2,571	62.5
8A.....	1,216	686	56.4	3,894	2,297	59.0
8B.....	1,126	640	56.8	3,591	2,117	59.0
All grades.....	5,249	2,935	55.9	16,301	9,809	60.2

The City Superintendent states, "While I would be the last to claim that this test is final or that it renders an effective decision against the Gary system for this city, it is fair to say that it raises a strong presumption against the general introduction of the Gary system into this city." Mr. Buckingham says, "Meanwhile, the Gary plan is on the defensive and it is inevitable that it should be. It is a new system, expressive of a new creed: it sets up new principles based upon new educational values. It is an important attempt to put into practice theories which are already accepted. But it will have to prove itself superior as a working program to the system which it seeks to supplant."

Finally if in order to secure a proper perspective we disregard the New York situation, ignore the adverse criticisms of the superintendents of Elizabeth, N. J., and Syracuse, N. Y., and turn to other localities in which the plan has either been adopted in whole or in part, a number of interesting facts are brought to light which do not bear out the claims of its advocates. In not one of these communities

is either the extent or the mode of adoption such as to warrant a belief that the Gary plan is in anything but an experimental stage. Sewickly, Pa., has a school population of about 800, all housed in one building; New Castle, Pa., has a limited application of the plan in four buildings; Winnetka, Ill., Troy, N. Y., and Los Angeles, Cal., have adopted the plan in one school. Kansas City follows the plan in two of her seventy-two schools, but after a trial of two years is unwilling to give any judgment as to its value. Philadelphia, Chicago, and Cleveland have not adopted nor do they contemplate adopting Superintendent Wirt's theories, and this fact is doubly significant, since the educational problem in these cities is comparable, both in magnitude and complexity, with that of New York.

Whether, then, the Gary plan be regarded either from the standpoint of stability or of economy or of the novel pedagogical features that seem to be integral to it, or in the light of its limited adoption by various communities, the inevitable conclusion is that it is as yet only an experiment, neither superior nor even equivalent to the best program of the orthodox type. But what shall we say to those enthusiasts who regard the Gary plan as the last word in educational practice? A touch of idealism, or a spirit of generous enthusiasm frequently makes appreciation march far in advance of achievement.

REVIEWS AND CRITICISM.

Variations in the Grades of High School Pupils. By Clarence Truman Gray, A.M. Educational Psychology Monographs, No. 8. Baltimore: Warwick and York, 1913.

Mr. Gray, an instructor in the department of education of the University of Texas, presents "a relatively simple method by means of which any high school principal can study the condition of the grading in his own school and take due steps to remedy the faults that he may find."

"The specific problem," the author explains, "is concerned with the *relative standing* of pupils in the different years of the high-school curriculum, as indicated by their marks and grades. Suppose a pupil at the end of the first year has a mark of 80 points (per cent), then our first problem is to determine whether this pupil's mark for the other three years remains near 80 points or goes up or down. Again, we may give the problem a somewhat different turn by using relative position rather than points. If we divide any class into five equal parts, putting the highest grades in the first quintile, our problem would be to determine whether any given pupil does or does not remain in the same quintile throughout the four years."

Although later in the book Mr. Gray explains the individual causes for variation in the case of fourteen pupils personally known to him, he would in general refer variations in grade entirely to eccentricities in the marking. It seems to be his theory that while teachers are "human, all too human," their pupils have the inhuman constancy of well regulated little clocks. It is not surprising, therefore, that he overlooks specific interest in mathematics, language, or science, and the effect of such interest in producing steady or erratic habits of work. Quite without asking whether a taste for mathematics (or its reverse, a special distaste for figures) is to be expected to occur more or less frequently than a gift for some other branch of the curriculum, he asserts, "There is no obvious reason why pupils should make a higher variation in one subject than another."

For the purposes of this monograph, grades were obtained for groups of approximately twenty-five students in English, History, Mathematics, Latin, Modern Languages, and Science, from each of ten public high schools, two in Chicago and eight in Indiana. "In the averages, the greatest variation is in Science, with English next. The large variation in Science can possibly be explained by the fact that the material used in the different years is unrelated. . . . The large variation in English seems to be due in a large degree to the erratic grading of this department in many of the schools."

Mr. Gray assumes that "a teacher gives grades to the individuals of her class in order to communicate to them her estimates of their ability"; but he concedes, "of course the term ability means something very different in English from what it does in mathematics," and here again he offers a bare statement with no hint of the discussion that has raged around these two moot questions. He shows the "curve of error" as the curve for the probable distribution of

ability, but he naively omits to correct it for elimination or for the distribution of grades above the passing mark of 70. From a study of 8969 grades at Harvard College he finds that the percentage of students falling into the five quintiles was 7, 20, 42, 21, and 7 respectively, and he apparently regards this as substantiating the regular form of the uncorrected and unskewed curve.

The most interesting pages in the book are those which give results obtained by having six different teachers grade independently the same sets of papers, eleven in mathematics and twenty in English, and comparing the grades to find the variations. They were all "highly trained experts in high-school work (not college teachers), so that if the grading of any one stood alone, no one would question the validity of the grades." Thoughtful students of educational problems will hardly be willing to follow Mr. Gray to his abrupt conclusion, "Teachers' marks are essentially unreliable." They may none the less heartily endorse his opinion that "There is urgent need of a standard which can be used by different schools, different departments, and by different teachers." Many educators believe that such standards are being set by the Courtis tests, and by other tests of excellence like the Hillegas composition scale, and the Ayres spelling scale, all of which Mr. Gray fails to mention.

Who is Insane? By Stephen Smith, A.M., M.D., LL.D. N. Y.: The Macmillan Co., 1916. Pp. 285.

The immediate and obvious answer to the question is, "No one or every one." Dr. Smith's own conviction is, "There can be no hard and fast lines drawn between large numbers of the sane and insane." In reporting a conversation between himself and an insane woman, he comes close to a satisfactory definition of insanity when he says to her, "You, of course, are insane, for this reason, the law provides that only insane persons shall be confined in asylums for the insane, while the sane are rigidly excluded. Now, as between you and me, you are legally confined in this asylum, and I am legally excluded; therefore, when you called upon me for a decision as to who is insane, you or I, I could promptly and truthfully say, why you, of course, are insane." Having gone so nearly far enough, Dr. Smith turns aside from his quest for definition, and asserts that the term insanity "defines nothing and cannot be defined; it can only be explained."

The promise of explanation is not fulfilled. The book is mainly a collection of gossip and entertaining anecdotes about insane persons, trials of insane criminals, and the care of insane in asylums. At the end, the extreme brevity of his treatment of eugenics in relation to insanity causes the author to make some loose statements, like this,— "The best scholars in the public schools often come from the homes of the illiterate, who are popularly classed as feeble-minded."

Had Dr. Smith called his book, "Memoirs of an ex-State Commissioner in Lunacy," the fitness of things would have been served, and students of psychiatry would not be misled into expecting that the book would contain material of scientific or diagnostic value.

NEWS AND COMMENT.

Eighth Annual Meeting of the National Committee for Mental Hygiene.

At the eighth Annual Meeting of the National Committee for Mental Hygiene held February 2d at the Hotel Biltmore in New York City, Mr. Otto T. Bannard, the Treasurer, announced that the Rockefeller Foundation had donated to the National Committee \$22,800 for carrying on surveys of the care of the insane in sixteen states during the present year.

The report of Mr. Clifford W. Beers, the secretary, showed that the movement for conserving the mental health and for improving the care of the insane and feeble-minded has grown in a remarkable way. Societies for mental hygiene are now at work in Connecticut, Illinois, New York, Massachusetts, Maryland, Pennsylvania, South Carolina, the District of Columbia, Alabama, Louisiana, and California. During the present year societies will be organized in Michigan, Rhode Island, Minnesota, Indiana, South Carolina, Tennessee and Texas. The financial resources of the National Committee and state agencies have also increased, until now about twenty-five times as much is being expended on this sort of mental hygiene work as was spent in 1908, when the first society was founded.

Dr. Walter E. Fernald, Superintendent of the State School for Feeble-minded at Waverley, Massachusetts, presented a plan which had been adopted by the Sub-committee on Mental Deficiency, of which he is chairman, for popular education, extensive surveys, and researches in this subject. Demands for advice regarding institutional provisions, special classes for backward children and psychological examinations in the children's courts, Dr. Fernald said, had been received from all parts of the country and it was felt that this movement to deal more adequately with the problem of the feeble-minded could be greatly helped by the same kind of authoritative advice and aid which is being given on behalf of the insane. A strong appeal was made by Dr. Fernald for special funds to meet the increased demands for this kind of work. Dr. William L. Russell, Medical Superintendent of Bloomingdale Hospital, described how the work of the National Committee is conducted under the supervision of an Executive Committee, all experts in different fields of mental hygiene.

Dr. Thomas W. Salmon, the Medical Director of the Committee, gave an account of the surveys of the care of the insane which had been carried on during the year in South Carolina and in Texas and announced that similar studies, each conducted by expert alienists, are under way or about to be undertaken in California, Tennessee, Missouri, Illinois, North Dakota, Indiana, and the District of Columbia. Attention was called to the striking change of attitude on the part of those charged with the care of the insane who not only permitted but welcomed such expert studies of their facilities for dealing with mental diseases. In the course of a moving description of the sufferings of the insane confined in county almshouses, jails, and poor-farms, Dr. Salmon expressed the belief that the surveys which have been made possible by the appropriation of the Rockefeller Founda-

tion will result in the complete abandonment of this type of neglect within the next few years. The steady decline since 1880 in the number of persons in almshouses is due, he said, in large part to the increasing provision in hospitals for the insane. And with the acceleration of this movement and increased provision for the feeble-minded, the end of the small town or county poor-farms is in sight. It was shown that 1668 such institutions, each with less than twenty-five inmates, existed in the United States, all serving no useful purpose but, on the contrary, inviting the improper detention of the insane and the feeble-minded. The most encouraging feature of Dr. Salmon's report was an account of the increasing interest in securing psychopathic hospitals for all large cities in which the earliest and most efficient treatment can be provided for acute and recoverable cases of mental disease. Such hospitals, each with its out-patient departments and psychological clinics for children, exist in Boston, Baltimore, and Chicago, as well as in several smaller cities, while New York is still unprovided with such an institution.

The following officers for the ensuing year were elected: Dr. Lewellys F. Barker, President; Vice Presidents, Dr. Charles W. Eliot and Dr. William H. Welch; Treasurer, Otto T. Bannard; Medical Director, Dr. Thomas W. Salmon; Secretary, Clifford W. Beers; Executive Committee, Dr. August Hoch (chairman), Dr. George Blumer, Prof. Stephen P. Duggan, Dr. William Mabon, Dr. William L. Russell and Dr. Lewellys F. Barker; Finance Committee, Prof. Russell H. Chittenden (chairman), Otto T. Bannard, Dr. Henry B. Favill, and William J. Hoggson; Committee on Mental Deficiency, Dr. Walter E. Fernald (chairman), Dr. L. Pierce Clark, Prof. E. R. Johnstone, Dr. C. S. Little, Dr. A. C. Rogers.

Proper Food for Young Children.

Simple bills of fare, helpful recipes, and practical directions for the preparation of foods for children between three and six years of age are contained in Farmers' Bulletin 717, "Food for Young Children," just issued by the U. S. Department of Agriculture, and written by Caroline L. Hunt, under the direction of Dr. C. F. Langworthy, Chief of the Office of Home Economics. It is issued at this time as a co-operative contribution to the "Baby Week" campaign conducted by the Children's Bureau of the U. S. Department of Labor.

The author has carefully avoided the use of all technical dietary terms or systems of grouping, and has so classified foods that any mother can meet the following definition of a satisfactory diet for a little child:

"A little child 3 to 6 years of age who is carefully fed in accordance with his bodily needs (as these are now understood) receives every day at least one food from each of the following groups:

- "1. Milk and dishes made chiefly of milk (most important of the group as regards children's diet); meat, fish, poultry, eggs, and meat substitutes.
- "2. Bread and other cereal foods.
- "3. Butter and other wholesome fats.
- "4. Vegetables and fruits.
- "5. Simple sweets."

The relation of food to the condition of the bowels is an important matter. Grains, particularly those containing the outer or branny layers or coats, are laxative; so, too, are such mildly acid fruits as apples, oranges, and grapefruit. So far, therefore, as preventing constipation is concerned, coarse grains and mildly acid fruits serve the same purpose.

The basis of a child's diet should be clean whole milk—at least a quart a day. Such milk, in addition to water contains about half a cupful of the very best food substances—butterfat, milk sugar, lime, and other materials needed by the child to make muscle, bones, and teeth. In addition milk contains a substance thought to promote growth by helping the body make good use of other foods. Where good whole milk is not obtainable, clean, fresh skim milk supplies these substances with the exception of the butterfat, and is, of course, preferable to dirty or questionable whole milk. Milk, however, contains very little iron, and therefore spinach and other green vegetables and egg yolks, which are rich in iron, combine well with milk.

The child should drink the milk with the chill taken off, or should consume his full quart a day with cereals and in milk toast, cocoa, milk soups and stews, in cereal puddings, egg-and-milk puddings, custards, junkets, or simple ice creams. Milk stews may be made with vegetables or fish, or to vary the diet these things can be combined with cream sauce and served on milk toast. The bulletin gives a large number of recipes for the preparation of various milk dishes which will help children consume the requisite amount of milk without growing tired of this valuable food.

Well-baked bread and thoroughly cooked breakfast cereals are both good for children, and with milk should make up a large part of the diet. Bread and cereal mushes are to a certain extent interchangeable, but neither can take the place of milk, meat, eggs, fruits, and vegetables. The yeast-raised bread given to young children should be at least a day old or should be toasted or twice baked.

Under the heading "Meat, Fish, Poultry, Eggs, and Meat Substitutes," the author says: "In some families children do not get enough meat and eggs; in others they get too much. A good general rule commonly followed is to give a child two years old or over an egg every other day and about the same amount (two ounces) of meat, fish, or poultry on the intervening days. Where meat is omitted, care must be taken to see that other suitable foods take its place—preferably an extra amount of milk and eggs."

Fried meats should not be given to a child, because they are likely to be overcooked and tough and also because the fat may be scorched and thus changed in composition. Scorched fat is almost certain to be hurtful to children. Meat is best given as broiled chop meat or in simple meat stews combined with vegetables. Poultry may be boiled and served with rice. When roasted, only the tender portions should be fed. Highly seasoned stuffing or rich gravy should not be given to a young child.

Dried and other fish, and oysters, may be used in milk stews. Well-boiled fish is good for variety. Eggs must not be overcooked or they are likely to cause indigestion. The best way to cook eggs is to poach or coddle them.

Fat is an important part of the food of children. There is more than an

ounce of fat (at least $2\frac{1}{2}$ level tablespoonfuls) in a quart of whole milk. If the healthy child is given a quart of milk, has butter on his bread, and meat or an egg once a day, he gets enough fat, and that which he receives is in wholesome form. It is well, therefore, not to give such fatty foods as pastry, fried meats and vegetables, and doughnuts or rich cakes.

Vegetables and fruits are grouped together because they are similar in that both supply iron, lime, and other mineral matters, and also mild acids. Vegetables are an important but often a neglected part of the child's diet. They should be served at least once a day, as they help to keep the bowels in good condition. Fruits are important for their flavoring, for their laxative effects and doubtless for other reasons, and should be served in some form at least once a day. Fruit juices and the pulp of cooked fruit, baked apples and pears, and stewed prunes, are the safest. The child should not be allowed to eat the skins unless they have been made very tender by cooking.

Sugar is a desirable part of the diet, provided it is given in simple sweets and not allowed to take the place of other foods and spoil the child's appetite. Simple sweets are such things as lump sugar, maple sugar, sirups, honey, and plain candy, and those foods in which sugar is combined in simple forms with fruit juices (in lemonade, water ice, jelly, etc.), with flour or starch as in plain cakes (cup cake, sponge cake, cookies), and with fruit as in jams, marmalades, and other preserves.

Harvard Teachers' Association.

The twenty-fifth annual meeting of the Harvard Teachers' Association was held in Jacob Sleeper Hall, Boston University, on Saturday, March 11, at 2:30 P. M., followed by the annual dinner at the Brunswick Hotel at 6:30. The topic for discussion at both the afternoon meeting and the dinner was "Education and National Life." The dinner was given by the Association and the Overseers' Committee for the Division of Education, in honor of Professor Paul H. Hanus. Professor Hanus began his teaching at Harvard University in 1891, and founded the Harvard Teachers' Association in the same year. In recognition of his leadership and influence a number of local and national educational societies were represented at the dinner and participated in arranging it.

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WEIGHTS AND SCHOOL PROGRESS.

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What does it profit a child if he be classified and grouped, aided and supervised, studied and investigated, and still is unable to progress, may, in fact, be able to do little more than mark time? No matter how elaborate a school system, no matter how elegant a curriculum, the fact must be kept in mind, as Dr. Johnson pointed out, that a child can be taught no faster than he can learn; and, to a great degree, he can learn only as fast as he can grow, not only mentally, but also physically. Before anything else can be done for the child, he must be properly nourished and fed.

We prate glibly about the sound mind in the sound body, but shake our heads when the feeding of children in school is suggested. We prepare overage tables and praise or condemn accordingly, but we fail to inquire whether or not the hand of fate has not been laid on a field over which we claim to have full control. No matter how we may strive to improve the school standing of the child, there is a check which says, "Thus far shalt thou go," and this check is the physique of the pupils. A casual glance at the weights of children of the same age in the different grades will convince one that almost automatically, the place of the child in the school is determined by his physique, and that a child will progress more rapidly according to his increase in weight.

In any examination of grade-weight tables, a few cautions must be kept in mind, and a few popular fallacies must be disregarded. It is a common experience in the classroom, that usually the smallest pupils are the brightest. This does not mean that therefore the pupils most underweight are the brightest. The pupils may be small for the grade, but when compared with other pupils in the school who are of the same age, it will be found that relative to pupils in the lower grades, such pupils are heavier. The larger pupils in the grade may be dull, but (1), they will be found to be much older than the rest of the children, and (2) they will usually weigh less than chil-

dren of the same age in higher grades. The small bright pupils are small for the grade, but large for the age, while the large dull pupils are large for the grade, but small for the age, this rule holding in almost all cases. A second point may not be so clear. The light pupils who are usually undergrade are variations from the normal. They are variations in the minus direction. They are lighter than they should be. In the same manner, the huge, ox-like children found in the lower grades are also variations from the normal. These are variations in a plus direction. Using the wider category, variation from the normal, it may be said that pupils who vary greatly from the normal in weight, will usually be found to be undergrade. Where larger averages are in question, these overweight pupils, however, do not occur in sufficient number to overbalance the number of underweight children. Where the numbers are large, the underweight pupils will, on the average, be found in the lower grades.

In 1909 I began to weigh the children of one school, and was able to continue the work in three other schools. These schools are designated schools A, B, C, D, the letters signifying simply the order in which the weighing was done during a number of terms. The letters are not ratings. I measured the weights and the standing heights of the pupils, and tabulated them by (1) grade, (2) sex, (3) nationality, and (4) school year. The measurements were taken in each school at relatively the same time, so that for purposes of comparison, the figures hold. The parentage of the children was recorded as Italian, Irish, German, Syrian, and miscellaneous.

TABLE I.
WEIGHTS (IN POUNDS) OF ITALIAN BOYS, BY SCHOOLS.

School	16 yrs.		15 yrs.		14 yrs.		13 yrs.		12 yrs.		11 yrs.		10 yrs.		9 yrs.		8 yrs.		7 yrs.	
A	1	90	10	94.1	32	87	40	81.6	43	72	34	67.7	33	65.1	13	57.9	14	52.2		
B			2	102.7	9	100.8	9	92.1	16	79.8	15	68.6	14	65.5	10	57.3				
C					3	84.3	6	73.6	14	69.2	25	63.9	32	61.3	59	58.8	45	53.1	16	4.77

If it is true that the school progress of children is determined in large measure by their weights, it must follow that the school which has the heavier and better nourished children will show the best results in the matter of school progress and instruction, other conditions remaining the same. It must follow that unless the physical bases in the two schools are the same, results of similar value can not

TABLE II.
VARIATION IN WEIGHTS OF BOYS IN FOUR SCHOOLS.

		17 yrs.	16 yrs.	15 yrs.	14 yrs.	13 yrs.	12 yrs.	11 yrs.	10 yrs.	9 yrs.	8 yrs.	7 yrs.
School A	Av. M. V. %		2 89.5 0.5 0.5	12 91 9.9 10.9	35 88 10.7 12.1	49 81.9 11 13.4	53 71.7 6.5 9.0	38 67.1 5.7 8.5	42 65 7.2 11.1	18 58.1 7 12.0	15 52 4.7 9.0	
School B	Av. M. V. %	2 108 2 2.0	3 114 8.6 7.5	11 103 15.4 14.9	40 98.0 12.1 12.3	42 89.5 14 15.6	46 81.6 8.2 10.0	44 70.7 6 8.5	42 65.7 5 7.6	22 62 6.3 10.1		
School C	Av. M. V. %				3 84.3 12.2 14.4	6 73.6 7.0 9.5	14 69.2 6.3 9.1	26 64.3 7.6 11.8	35 61.3 4.7 7.8	70 58.4 4.8 8.2	47 52.9 2.5 4.7	16 47.7 3.5 7.3
School D	Av. M. V. %	2 128.5 5.5 4.2	1 123 0 0	12 110.8 11.4 10.3	26 102.1 15.8 15.4	29 84.5 10.9 12.9	29 80.9 10.0 12.3	27 74.8 7.5 10.0	25 67.9 5.9 8.7	16 62.3 5.8 9.3	12 54 5.2 9.6	13 49.7 4.9 9.8

TABLE III.
WEIGHTS—PERCENTAGE DISTRIBUTION BY GRADES AND AGES—BOYS.

Age	14 yrs.				13 yrs.				12 yrs.				11 yrs.				10 yrs.			
School	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Wt.	88	98	84.3	102.1	89.5	89.5	73.6	84.5	71.7	81.6	92.2	90.9	67.1	70.7	64.3	74.8	65	65.7	61.3	67.9
No.	35	40	3	26	49	42	6	29	53	46	14	29	38	44	26	27	42	42	35	25
8B		22.5				4.7				2.1										
8A		10.0	....	7.7		4.7				2.1	....	3.4								
7B		25.0	....	15.4		14.3	....	6.9		4.3	....	10.3								
7A		15.0	....	7.7		14.3	....	13.8		8.7	....	17.2		4.5	....	7.4				
6B	11.4	7.5	....	15.4	16.3	19.0	....	13.8	3.7	13.0	....	6.9		6.8	....	11.1				
6A	8.5	7.5	....	7.7	10.2	7.1	....	17.2	5.6	28.3	....	10.3		15.9	....	18.5				4
5B	17.1	2.5	....	15.4	24.5	7.1	....	6.9	13.2	13.0	....	6.9	15.8	11.3	....	25.9		9.5	....	12
5A	17.1	7.5	....	11.4	12.2	9.5	....	20.7	11.3	10.8	....	17.2	2.6	9.1	....	3.7	7.1	21.4	....	12
4B	11.4	2.5	....	3.8	22.4	4.7	....	3.4	22.6	2.1	....	13.8	42.1	31.8	....	3.7	28.5	23.8	....	12.0
4A	14.3	....	66.6	7.7	8.1	14.3	33.3	10.3	15.1	10.8	....	6.9	7.9	11.3	34.6	14.8	35.7	28.5	20.0	12.0
3B	28	....	....	3.8	2.0	....	....	6.9	13.2	4.3	35.7	....	18.4	9.1	26.6	11.1	11.9	16.6	22.8	12.0
3A	....	....	....	3.8	....	....	....	....	3.7	....	....	....	5.2	....	3.7	14.3	....	....	22.8	28.0
2B	....	....	....	....	....	....	....	....	....	7.1	6.9	....	....	3.8	....	....	....	....	8.6	8.0
E	11.4		33.3		4.1		66.6		....		57.1		5.2		34.6		....		
U	5.7				....				11.3				2.6				2.4			
Below	7A	7A	4A	7A	6B	6B	4B	6B	6A	6A	4A	6A	5B	5B	4A	5B	5A	5A	4A	5A
Percent	100	27.5	100	69.0	83.5	42.7	100	65.4	90.4	41.0	100	51.7	84.0	61.3	100	37.0	92.8	68.9	80.0	72

be obtained. It is extremely convenient for a supervisor to apply to the schools the political formula, "All men are created equal," and to hold that there is little difference in pupils, and that where results or progress are not up to some arbitrary standard, the teacher must necessarily be at fault. But let us see. If we consider only the physical bases, and compare the weights of only the Italian boys in schools A, B, and C, we find that school B has the heaviest Italian children. We should be led to infer that school B has also the better Italian material, and will show greater progress. If we look at table III we see that this is so. In this table I have distributed the number of pupils for each age-year by grade, and noted the percentage of such pupils in the grade. For example, take the eleven-year-old boys in the three schools. School A has 38, school B has 44, and school C has 26. The first group averages 67.1 pounds, the second, 70.7 pounds, and the third, 64.3 pounds. The percentage distribution shows that the heaviest group has 61.3 per cent of the pupils below the grade 53, while the next group has 84 per cent below this grade. The lightest group is not in the running at all: it shows all of its eleven-year-olds below the fifth school year. As school D contains mostly Syrian pupils, a comparison involves the added factor of nationality, and is vitiated to that extent, but even here the comparison holds in most cases. The heavier pupils fill the higher grades, and the school which has the heavier pupils has most of these pupils in the higher grades, when compared with the other schools.

Comparing the girls of the different schools, one finds the same state of affairs, namely, that the heavier girls, on the average, are in the higher grades, and that the school which has the heavier pupils has a larger per cent in the higher grades. Detailed figures are given for the girls in table IV.

In this connection the tables issued under the direction of the Hon. J. A. Hogue¹ are worth reprinting for the benefit of American readers. The results obtained by him in Sydney, New South Wales, show with convincing regularity that the lighter the pupil, on the average, the lower is his school grade. As over 30,000 pupils were measured, these results can not be questioned. They appear as tables V and VI.

¹ Report upon the Physical Condition of Children Attending Public Schools in New South Wales, issued by direction of the Hon. J. A. Hogue, Sydney, 1908, pages 56 and 57.

TABLE IV.
WEIGHTS—PERCENTAGE DISTRIBUTION BY GRADES AND AGES—GIRLS.

	School A										School B										School C										School D									
	14	13	12	11	10	9	14	13	12	11	10	9	14	13	12	11	10	9	14	13	12	11	10	9	14	13	12	11	10	9	14	13	12	11	10	9				
Age																																								
No.	21	19	28	19	19	7	28	49	46	45	27	14	1	2	16	24	35	59	14	19	32	23	27	25																
Wt.	89	287	177	969	960	153	198	288	282	771	867	462	184	82	74	271	860	956	499	636	376	971	268	257	5															
8B							28	5	8	1																														
8A							14	3	16	3	4	3																												
7B							10	7	6	1	8	7																												
7A							10	7	14	3	13	0	2	2																										
6B	4	8	15	7	14	3																																		
6A	19	0	21	0	7	1																																		
5B	23	8	15	7	14	3	10	6																																
5A	4	8	10	5	10	7	10	5	10	5	15	7	14	3																										
4B	19	0	5	3	10	7	47	4	10	5	14	3																												
4A	9	5	10	5	21	4	15	7	26	3																														
3B	4	8	5	3	7	1	15	7	21	0	14	3																												
3A																																								
2B																																								
2A																																								
E	14	3	15	7	7	1																																		
Below Grade	7A	6B	6A	5B	5A	4B	7A	6B	6A	5B	5A	4B	7A	6B	6A	5B	5A	4B	7A	6B	6A	5B	5A	4B																
Per cent	100	8	40	78	4	89	3	78	8	71	4	50	0	34	6	29	9	60	7	62	9	64	3	100	100	100	100	100	100	100	100	100	100	100	100	100				

TABLE V.

		WEIGHT IN POUNDS.												SCHOOL YEAR AND AGE.											
		20 yrs.	19 yrs.	18 yrs.	17 yrs.	16 yrs.	15 yrs.	14 yrs.	13 yrs.	12 yrs.	11 yrs.	10 yrs.	9 yrs.	8 yrs.	7 yrs.	6 yrs.	5 yrs.	4 yrs.	3 yrs.						
Boys	7th yr.		1 133.2	8 138.0	27 128.8	62 131.2	173 107.6	162 98.1	103 88.5	14 75.8	4 73.4														
	6th yr.			1 128.5	9 123.5	49 111.6	154 100.4	344 94.3	413 84.9	166 77.5	37 74.6														
	5th yr.				3 130.2	21 108.8	103 100.1	439 91.6	868 83.1	882 76.6	309 71.9	55 67.2	1 64.0												
	4th yr.					2 117.0	25 98.3	129 86.1	570 79.7	812 73.6	838 68.6	447 64.8	72 61.1	2 58.3	1 53.5										
	3d yr.					4 101.9	7 92.6	40 84.0	265 76.0	570 71.1	928 67.3	1087 62.8	671 59.6	125 57.0	5 52.4	1 61.0									
2d yr.								8 76.6	49 72.3	119 69.5	290 65.1	591 61.1	983 57.3	721 54.5	129 51.8	1 40.5									
1st yr.								1 84.0	6 63.3	16 66.9	39 62.2	145 59.7	447 55.4	1141 52.0	1787 48.6	1504 44.8	706 40.8	47 37.1	4 35.6						
Girls	7th yr.	1 121.2	3 117.7	15 119.8	47 112.6	69 110.2	135 108.0	102 102.7	57 98.1	4 78.7															
	6th yr.			2 109.2	12 110.9	52 106.8	146 102.9	303 97.5	338 90.0	110 83.5	13 76.4														
	5th yr.				5 109.0	17 107.9	122 100.2	361 94.2	741 87.7	579 77.7	240 71.8	28 68.8	1 66.0												
	4th yr.						14 95.2	141 91.9	508 85.5	795 76.2	713 68.9	391 64.9	55 58.5	2 55.1											
	3d yr.				1 80.0		1 119.5	40 91.4	173 82.5	433 74.8	746 67.2	888 62.4	557 58.4	107 54.8	3 55.6										
	2d yr.							6 93.1	25 75.7	98 73.9	244 66.4	512 60.3	837 56.4	708 53.0	139 49.7	5 45.8									
	1st yr.									4 95.9	4 99.0	38 68.6	119 59.9	368 53.9	1025 50.9	1506 47.4	1286 43.4	595 39.7	40 36.1	4 36.1					

TABLE VI.

SCHOOL YEAR AND AGE.																			
HEIGHT IN INCHES.																			
		20 yrs.	19 yrs.	18 yrs.	17 yrs.	16 yrs.	15 yrs.	14 yrs.	13 yrs.	12 yrs.	11 yrs.	10 yrs.	9 yrs.	8 yrs.	7 yrs.	6 yrs.	5 yrs.	4 yrs.	3 yrs.
Boys																			
	7th yr.	1 66.5	8 67.0	27 66.8	62 65.2	173 62.2	162 61.0	103 58.8	14 56.1	4 55.6									
	8th yr.		1 64.0	9 65.5	49 63.5	154 61.6	344 60.3	413 57.8	166 56.3	37 55.4									
	9th yr.				3 66.9	21 62.6	103 61.5	430 60.0	868 57.4	682 55.8	309 54.4	55 53.2	1 50.0						
	10th yr.				2 63.3	26 61.8	129 58.5	570 56.8	812 55.0	838 53.7	447 52.4	72 51.0	2 51.0	1 47.5					
	11th yr.				4 61.6	7 59.8	40 56.9	265 55.8	570 54.5	928 53.3	1087 52.1	671 50.6	126 49.4	5 48.8	1 51.5				
	12th yr.						8 53.4	49 54.8	119 54.1	290 52.9	591 51.3	983 49.8	721 48.5	129 47.5	1 44.7				
	13th yr.						1 58.5	6 53.3	16 53.4	39 51.8	145 50.9	447 49.1	1141 47.8	1787 45.9	1604 43.9	706 41.7	47 39.1	4 38.1	
Girls																			
	7th yr.	1 63.5	3 61.7	15 63.3	47 62.2	89 62.1	135 61.7	102 61.1	57 59.7	4 56.3									
	8th yr.			2 62.3	12 61.1	52 61.9	146 61.5	303 60.6	338 59.2	110 57.4	13 54.9								
	9th yr.				5 61.1	17 62.3	122 61.1	361 59.9	741 58.5	579 56.4	240 54.7	28 53.6	1 51.5						
	10th yr.						14 59.9	141 59.2	508 57.9	795 55.9	713 53.9	391 52.3	55 50.2	2 48.2					
	11th yr.					1 57.2	1 54.5	40 53.8	173 57.1	433 55.3	746 53.2	838 51.8	557 50.4	107 48.7	3 47.5				
	12th yr.							6 56.7	26 55.9	98 55.1	244 52.6	512 51.0	837 49.5	708 48.0	139 47.0	5 45.8			
	13th yr.																		
	14th yr.								4 59.9	4 54.2	28 52.2	119 50.7	398 48.7	1025 47.3	1506 45.5	1286 43.4	595 41.2	40 38.3	4 41.0

"CONSTRUCTION TEST A" OF THE HEALY-FERNALD SERIES.

BY AUGUSTA F. BRONNER, PH.D.,

Assistant Director, Psychopathic Institute, Juvenile Court of Chicago.

In the February number of *THE PSYCHOLOGICAL CLINIC* there appeared an article entitled "A Study of the Fernald Form-Board" by Bruckner and King. We cannot let this study pass without comment, for several reasons. The test referred to is in reality "Construction Puzzle A," first described in the *Psychological Monograph* No. 54, March, 1911. This monograph contains a description of a group of "Tests for Practical Mental Classification" described by Dr. William Healy and Dr. Grace M. Fernald—a series of tests now used perhaps more widely than any one series, with the exception of the Binet-Simon tests. It is because of the very general use of "Construction Puzzle A" that we feel much misunderstanding may arise through the study recently published in *THE CLINIC*.

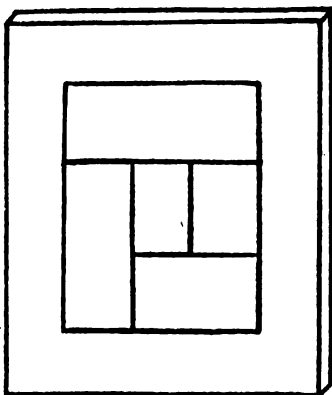
To begin with, the title, "A Study of the Fernald Form-Board" is totally inaccurate. First, Fernald is not the originator; credit for the idea of the test is definitely given by Healy and Fernald to Professor Freeman. Secondly, it is not a form-board, properly speaking, but rather, as its correct name suggests, a test for constructive ability, the purpose of which is very different from that of the ordinary form-board. The latter tests perception of form; the former, perception of relationship of form.

Furthermore, the technique used by Bruckner and King is evidently quite different from that originally described for the test and commonly used. They apparently use it as a learning test, for which it was not intended. Their study offers a striking example of the weakness of not stating specifically the procedure used.

Thus in the Bruckner and King study we are told, "It was possible to put the blocks into the form-board in eight different ways." We cannot conceive what is meant by this, for, as originally planned and commonly used, there is but one way in which the blocks can be placed correctly. Since the eight ways are not described, yet form the basis of their findings, the study becomes practically meaningless to those who are unfamiliar with these writers' method. Certainly, nothing in the directions given in *Psychological Monograph* No. 54

nor in the study by Dr. Clara Schmitt (Psychological Monograph No. 83), who has standardized the test following closely Dr. Healy's directions, would explain the possiblity of the method.

It is possible that the puzzle itself is not correctly made. We know that at Ellis Island this test was once being used with materials so improperly made as to defeat the specific object of the test. In the correct form certain parts are interchangeable, and unless so constructed the test loses its whole value. The frame must be manufactured very accurately. If these precautions are taken, it would seem impossible to use the test in a manner so different from the original directions.



The authors do not refer to the work done with this test by others, and yet references to it in the literature of psychological tests are very frequent. There is the standardization given by Schmitt, mentioned above, in which the technique is described in detail. She has presented her findings for time and method of solution used, both according to school grade and according to age. Knox has placed this test at eight years in his "Scale for the Estimation of the Degree of Mental Deficiency in Illiterates and Others." This age placing is based upon the fact that more than 50 per cent of his eight-year-old subjects solved the test correctly. Terman, in his revision and extension of the Binet-Simon measuring scale of intelligence, 1914-1915, places the test in the ten-year group, allowing a shorter period of time for the solution than Knox does. In a later revision, 1915-1916, he leaves this test at the same age-level, but alters the procedure, using it apparently as a learning test, in part at least. We do not know the basis for his decision. Results with this test are reported, also, in a bulletin issued by the State Board of Charities

of New York, where the findings, based on extensive study, show the test to be suitable for the nine-year level of intelligence.

In the Bruckner and King study the only figures comparable to other studies are the median times given for the first trial with eight

"CONSTRUCTION PUZZLE A"

RECORD OF NORMAL BOYS OF GOOD INNATE ABILITY								
Age	Number of cases	Median time in seconds	Range in seconds	Range in sec. 25-75 Percentile	Median number of moves	Range	Range 25-75 Percentile	Per cent failure
11	20	45	11-202	22- 73	13	6-36	8-16	10
12	30	41	6-270	21- 90	11.5	5-53	7-20	3
13	33	54	11-259	17-102	13	5-38	7-20	6
14	37	30	10-178	16- 65	11	5-33	8-18	6
15	59	40	7-241	17- 85	12	5-41	7-20	2
16	67	32	7-250	17- 71	9	5-44	7-18	3
17	38	26	8-224	17- 53	9	5-43	7-15	5
RECORD OF NORMAL GIRLS OF GOOD INNATE ABILITY								
11	7	61	20-152	13- 21	19	13-34	15-21	0
12	14	38	10-159	14- 65	8.5	5-26	6-11	7
13	11	47	10-162	24- 71	13	5-31	7-14	9
14	20	24	9-130	20- 35	9.5	5-26	7-10	5
15	24	33	9-270	22- 62	8	5-39	6-14	4
16	44	42	8-184	21- 77	9	5-31	7-16	0
17	43	25	8-200	18- 34	8	5-21	6-10	4
Mental Age	FEEBLEMINDED BOYS							
7-12 yrs	56	70	15-288	35-107	14.5	5-44	12-26	36
Mental Age	FEEBLEMINDED GIRLS							
7-12 yrs	36	95	17-292	26-128	15	5-71	8-26	31

and ten year old children. The time scores for the later trials cannot be compared because in most instances later trials are not given. It seems to us a great pity that these investigators have not used the test in such a way that their results throughout would be clearer. With the present effort to standardize tests which are being widely

used, it would seem wise that everyone should adopt the same technique in order to facilitate this end, or at least give the variations from the generally accepted technique in such detail that the findings can be readily interpreted.

Our own study of young adolescents leads us to question whether "Construction Puzzle A" is valuable as an age test. We believe that it is better adapted to throw light upon ability along certain lines regardless of age. In our laboratory we see many more individuals over ten years of age than under, whereas in most of the experimental work with this test it is those of younger age who have been used as subjects. Then, too, all the individuals are studied by a wide range of tests so that their mental status is quite well determined. When, however, the standardization of a test is based upon data gathered in schools the mentality of the children cannot be determined and there might conceivably be included feeble-minded and greatly retarded, as well as the normal. A few such extreme cases would alter averages considerably.

Noting our results we find:

A. Among boys 11 to 17 years of age, all of whom are of good general innate ability: (1) At all ages there are some individuals who fail to solve this test within the time limit of five minutes. (2) The median time does not decrease steadily with increasing age. (3) The same is true for the median number of moves required in the solution. (4) There is very great variability in the scores for both time and the number of moves, and this variability does not decrease with increasing age. (5) Scores combining time and moves according to an arbitrary scale, show the same results.

B. Among girls, 11 to 17 years of age, all of whom are of good general innate ability: (1) The results present the same characteristics as for boys, except that they are slightly better throughout. There are fewer failures, the median time and number of moves are lower; but the results present the same general features as those for boys.

C. Among the feeble-minded, as diagnosed on the basis of Binet and other tests: (1) The test is not solved correctly by any individual who grades lower than a moron. (2) A large percentage of the moron group succeed in solving the test. (3) The successes are scattered from those with a mental age of 7 to those whose mental age is above 10 years. (4) Success with the test among the feeble-minded does not depend upon chronological age, and thus world experience does not seem to be a determining factor. That is, there are children 11 years old chronologically and 7 years old mentally,

according to the Binet scale, who succeed; on the other hand, there are children 14 years old chronologically who grade as 10 years mentally by Binet tests who fail.

The table on page 46 furnishes the data from which these conclusions are drawn:

From the above it would seem clear that "Construction Puzzle A" is not a good test for determining general intelligence or for placement at some specific age-level. Rather, it affords an opportunity of testing the subject's ability to solve a particular kind of problem, namely, one that involves perception of relationship of form. It enables one to know the subject's reactions in a particular kind of situation, to find the method used in a solution, and the ability to profit by the experience of repeated trials. This it does as well for older as for younger subjects.

RETARDED CHILDREN NOT DEFECTIVES.

BY ANNA JOHNSON,

Teacher in Elmwood School, Denver, Colorado.

Since the searchlight of investigation has turned its ray on childhood, we find children classified in the following terms: normal, abnormal, subnormal, supernormal, and retarded. Those who know, or think they know, tell us that normal children are children that conform to the average human type representing the present stage of civilization. Abnormal, subnormal, and supernormal children are those who deviate from the average human type, and retarded children are those who have failed to make the usual progress in school work, as prescribed by school authorities and courses of study.

This article is to deal exclusively with retarded children. For the past five years, I have had the privilege of observing the intellectual and spiritual unfolding of about one hundred and fifty retarded children who were classified in the fifth, sixth, seventh, and eighth grades. Out of this by-product of the school system, I can safely say that not one could be grouped as a mental defective. This naturally provokes the question, "Why were these children retarded?" On investigation, the most prevalent causes were found to be economic, temperamental, disciplinary, slow mental growth, physical defects, and general illness. Those tabulated under general illness were only about one per cent. Frequently these children are very bright, but their continual absence from school duties prevents them from making that seventy per cent which stares them in the face in every subject. Hence on account of the disorganized knowledge these children have, they become retarded, but they are not defective.

If children were passed on their ability to make a conscious connection between the work of their present grade and the work of the grade to which they should be advanced, it would decrease retardation, and be a fairer passing test than the seventy per cent.

The physically defective children found in the Retarded School, are those with poor eyesight, defective hearing, adenoids, bad tonsils, and the hundred and one ills attributed to childhood. But when these physical defects are corrected so that the mind can function without any outcry from the physical body, these children recuperate mentally and often make greater progress than the so-called normal children in the regular grades.

Another type is the child of slow mental growth who fails year after year in his studies, and we think surely this is a mental defective of some sort. But we are wrong again. We found any number of such children, after one or two years of adolescence, blossom out all at once. Such children live in that quiet, subconscious state where the real mind does its work in secret. When they find themselves, and their conscious mind is awakened to the realities of the external world, they take hold of the problems confronting them in the most effective manner. And then it is a case of the stones which the builders rejected becoming the corner stones of the temple. Frequently in after-life these young people make great success of the very subjects in which they appeared to be slow.

A heavy percentage of retarded children are so through economic conditions. Last year 30 per cent of the children in my room came from homes where the mother either had to help support the family or was the sole support of the family. When the father can't get work or when he considers the burden of life too great, he often walks away from home and forgets to come back. The mother becomes the burden bearer, the meager supporter of the family. She usually sews, cooks, waits on table, or works in a department store. She is gone all day and the children are left to shift for themselves. They are hungry, poorly clad, and unclean. They come to school all out of sorts, they fail to get their lessons, they show no consideration for the rules of the school, and why should they?—life has extended no courtesies to them. We cannot hope that children who come from such dwarfed and twisted homes should be obedient and good, and step right into the many activities which are worked out of a course of study. So these victims of broken homes and the economic conditions of our splendid civilization become retarded. They do not pass and the teacher with forty or fifty children on her hands has no time to look into their home conditions, to say nothing of studying their mental and moral natures. Possibly then some wise head comes along and pronounces them defective, mainly morally. But they are like those children we call the normal type. When set right with the world they show keen appreciation for what is done for them and become anxious and willing to do right. The conscience of a child is not hard to reach, and what higher result in education can we aim for than to bring a human being face to face with his own conscience? Every child is a new world and we must help make that world beautiful both internally and externally.

Speaking of temperamental causes of retardation I have reference to superior or talented children. These children are the most misunderstood and abused children in the whole school system and

invariably become targets for that word "defective". They are the children of genius and treat no subject with respect except that one toward which they feel their divine impulse. They have strong outbursts of temper and passion, in other words they are moody and emotional. Instead of such antics being evil, they are marks of a noble and original temperament. In it lies dormant the creative genius that characterizes the poet, the artist, the inventor, the reformer. Children with such natures should be carefully disciplined. Their emotions must not be rooted out but controlled with a discipline that is just yet firm as steel. In this surging sea of feeling rocks the future of the child, as well as that of the race. It is the soil from which will sprout the seed that will afterward determine the saint or the sinner. Through the study of biography both past and present, we learn that genius can never be molded along the lines prescribed by the ordinary school system. The most specific type I ever saw of the temperamental child was a boy I had in school for three consecutive years, and who is now a cartoonist on one of the foremost daily papers in the country. He was not discovered in the most gentle way, but he was discovered. For two of the most precious morning hours I tried to get something out of him through various lessons, but of no avail. He showed little active resentment until technical grammar was thrust upon him, then life became unbearable. He picked up the book and hurled it at me. Going back to his desk I found him engaged on a cartoon. The spirit of genius was crowding him and he had no time for my petty subjects. At times, we didn't speak for days, but at the end of the period a cartoon was sold, and perhaps it was found on the front page of the paper. Then we were all happy.

In addition to his ability as a cartoonist, this boy has marked talent along literary lines. He has written several short stories of merit as well as two or three poems that have been published.

He never took the Binet-Simon tests, but he was considered somewhat defective, chiefly from a moral view point. I made a record of all his moral moods where real conscience was involved, and found he had the keenest sense of justice, as well as cleaner morals than most boys of his age. It is decidedly worth while to give special attention to children of this type. They are the ones that adorn our civilization; they produce food for our emotional nature, and spin the threads that bind together the finer fibers of life.

The children who are in the Retarded School for discipline are those who have no liking for a classical education, or rather for school books. They come to school year after year resenting most of the subjects in the school curriculum. They are nagged at and

punished at school by the teacher and the principal, and sometimes by the truant officer, until in self-defense these children become almost fiendish in trying to preserve their natural impulses. As a last resort they are dumped on the Retarded School. Usually they have worked fairly well until they have reached the fifth or sixth grades, then they begin to resent everything in the school system. Right here some sort of industrial education should be presented to them because they are eager for the industrial side of life. Most of the boys are truants but they are bright. They can give a teacher more practical information than she can give out to them. They like lots of arithmetic and sloyd. They prefer to read about current events, mechanics, and all sorts of industrial matters rather than in the school reader. They want to be in partnership with the teacher instead of being subordinate. These boys are optimistic and versatile. They work in gangs and are usually loyal and honest. If we could look beyond the pale of the school system we would see in these young people the captains of industry, the leaders and managers of great commercial enterprises.

Girls of this type like sewing and cooking; they like to make beautiful things for the home and are invariably fond of little children. They are very neat and spend much time on their personal appearance. After finishing the eighth grade they usually marry in a year or so, and our observation has been that they make good wives.

There is something to be said in favor of these children who vibrate along the industrial wire. All we need is to take an outlook on life and we shall find that at least 85 per cent of the human race are engaged in productive labor. Is it not right then that many of our children should be eager for the industrial side of life? Instead of attaching to them that word "defective," which has been so freely misused for the past few years, let us set our children to the tasks which are to their liking, and so turn their activities into creative channels, instead of allowing them to be wasted in concentrated crime.

Progress can do nothing better than make the most out of all of us as we are, therefore our aim should be to prepare the children for whatever work life brings them, and for whatever they are capable of doing. We must never forget that future history plays at our feet, and if we hope to perpetuate any lofty ideals in the race, we must do it through the children, by educating them as individuals along their God-given impulses.

STANDARD TESTS AND SCALES OF MEASUREMENTS.¹

BY T. BRUCE BIRCH, PH.D.,
Wittenberg College, Springfield, Ohio.

Every teacher and every superintendent depends upon some tests or scales of measurement in determining the progress of pupils, grades, schools, or the efficiency of a school system. It is quite apparent that the old standards are unsatisfactory for accurately testing the product of the schools. Too much play is permitted the subjective element, the personal equation, mere opinion, or *a priori* judgments, in the estimate of academic attainments and educational progress; as is seen in the great variations shown by teachers in estimating the work of individual pupils in the same branch, in different branches, or in similar work at different times. The teacher seems to arrive at some degree of accuracy in estimating the progress of pupils by the trial and error method.

Even the examination as an objective method of testing the progress of pupils, is too crude a standard of measurement. By it alone a teacher cannot secure any precise estimate of the progress of pupils, individually or collectively; nor can a superintendent judge of the efficiency of schools or school systems in terms of results. Each teacher usually establishes a self-made standard by measuring all pupils in terms of the grades of several. The more radically a teacher differs from other teachers in this estimate, the more he should have the assistance of an objective standard.

Parker² states that when the same geometry examination papers were marked by the teachers of mathematics in forty-three high schools, where 70 per cent is the passing mark, the grades varied from 25 per cent to 90 per cent; while in seventy-five schools, where the passing mark is 75 per cent the grades varied from 39 per cent to 85 per cent.

We are told that "human life is a deeper and more complicated subject than can be probed by quantitative tests, that the important elements in mental and moral development of pupils are of an intangible character and can't be confined to terms of measurements," that the spiritual side of education, though real, is so vague and indefinite that in all probability it defies and escapes measurement. But when these more subtle components of education have been

¹ A paper read before the Schoolmasters' Club of Central Ohio, and prepared after listening to discussions at the recent N. E. A. meeting in Detroit, with the assistance of Part I of the Fifteenth Yearbook of the National Society for the Study of Education.

² *Methods of Teaching in High Schools*, p. 566.

excluded, there is no doubt of the fact that there are other elements in education, which are primarily objective and can be measured with reasonable exactness. The more clearly the objective results of education are understood, the greater the appreciation of the spiritual elements in education. There is, therefore, need to devise and to use more precise methods of measurements to estimate the progress of pupils, grades, and schools, and to test the efficiency of school systems. Any measurement of results, says Strayer, "furnishes primarily a knowledge of a situation which makes clear the problems involved and which suggest a method of experiment that looks toward desired improvement."

To prove the claim that progress in accomplishment has been made and that the aim of education has been realized in school work, it is necessary as Strayer says, "to secure more and better instruments of precision in the measurement as obtained by scales or units." Such objective scales are needed to eliminate or at least properly subordinate all unsupported opinion or even cumulative *a priori* judgments; to get rid of subjective variation and to reduce the amount of variability of judgment of the same teacher or of various teachers to the minimum. The validity of a scale consists in its power to reduce the variability of judgment of a teacher's estimate. This is accomplished by an objective measurement, which is defined as the result of an attempt to establish a definite standard under controlled conditions. "Teachers need to see the value of controlled experiments," as Courtis stated at Detroit in the Normal School section of the N. E. A., for "objective measurements show that 40 to 50 per cent of pupils stand still." That statement may be exaggerated, but it contains much food for reflection.

The aims or purposes of standard tests or scales are manifold. It is understood of course, that the scales are not for daily use. They may be employed to discover at the beginning of a term what pupils know before being taught, and then again later to determine in a more accurate manner the progress made by pupils. They also assist the teacher's judgment in forming a basis for inference, thus freeing the teacher from the charge of partiality. But the primary and distinctive purpose is to improve directly the instruction of pupils. They may lead to a definiteness in school work by serving the following uses:

(a) To show to the superintendent, or the principal, the extent to which their plans have been correctly interpreted and put into operation; to furnish them and the teacher with useful facts concerning pupils and classes, and to indicate general tendencies in the school system as a whole. This knowledge may provide a sound basis

for the supervisor in judging the efficiency of teachers, and in determining the standard and needs of pupils. Such information will suggest some necessary changes in revision or in the introduction of new methods.

(b) To determine the most economical and efficient method of teaching school subjects.

(c) Not merely to accumulate educational statistics, but to enable the superintendent to check the results of his school system by a scientific test.

(d) To discover the variability of grades and schools, and by the employment of the average results of several like grades to secure a standard of measurement. Such tests can be applied especially to the accuracy of work done.

(e) To test by a relatively stable standard what content is retained by pupils for later use in their work, since certain content must be basic for the interpretation of future work; and also to indicate the standard units of work required for promotion.

(f) To secure as Whipple¹ says "a relatively refined and precise method of more accurate determination of the mental traits or the general mental status of a pupil than can be measured by other methods, as by inspection of his marks or his school progress in terms of the teacher's personal estimate."

(g) To discover the bright pupils of every class who are over-practiced, or over-drilled, and release them from practice work. Able pupils are often harmed by too long continuance in drill while the dull or slower pupils may profit by more drill. In this way the variation in a group may be reduced to a minimum. Melcher states that "the majority of pupils are average pupils and should move in mass," yet "there is a considerable number of especially slow pupils and also of especially bright pupils that should not be sacrificed to mass movement." When a pupil reaches the standard in his grade, he may give his attention to other work, and be tested in the lapsed branch about every ten days. When the individual standard is in danger of becoming lowered, pupils should be put back into the work.

Starch believes that "one-third of the pupils waste time by being in classes in which they know practically all the material that is being covered in the recitation period and are able to perform all the tasks expected of them." "One pupil out of every three is promoted too slowly and one pupil out of every three is promoted too rapidly." If these statements are correct, there is great need of more definite standards, by which pupils can be compared so as to ascertain whether

¹ Whipple, G. M. *Manual of Physical and Mental Tests*, p. 549.

or not they are up to standard. "Standard scales indicate to the teacher that there is no further need to waste time in drilling the bright pupils; and release from drill does not discourage pupils, but rather encourages them to excel the standard."

The present average standard is good for the sub-normal, but not so good for super-normal pupils; indeed, it makes no provision for the super-normal. But the standard scales provide a means of interpretation of the pupil, determining the presence of general ability, and the presence or absence of special ability, as revealed especially by the mixed relation test. Thus they assist both the super-normal and the sub-normal. They indicate to the teacher those who should be promoted and also aid in the securing of reasons why pupils fail. Those pupils who have not shown progress can be selected and assigned to a normal student, or a graduate student, or even a skilled teacher, to find out the causes for failure to make progress. The value of properly used standard tests and scales is seen in the increase in "good teaching, and good grading, which keeps pupils of like ability together."

Whipple says that "the object of mental tests, practically considered, is to secure by a relatively refined and precise method, a more accurate determination of the mental traits or the general mental status." According to him there are two kinds of tests:

1. Those which "aim to determine with some precision the presence or the absence, or the amount of some specific mental characteristic."
2. Those which "aim to determine with perhaps somewhat less precision the general status of the child's intelligence, his mental level, or general all-around ability as related to other children of the same nationality, sex, age, and social status."

Buckingham makes essentially a three-fold classification of tests on the basis of objective means of measuring school products:

1. Scales, or tests "based upon the judgments of competent persons."
2. Scales, or tests based upon "the ratio of correct responses to total responses" in a typical group. These systematized scales are based upon many responses, or the ratio method, the per cent of correctness. The scales based upon the determination of "the ratio of correct responses to total responses" are somewhat dependent upon individual judgment. It is frequently a matter of opinion whether a response is correct or not, and judgment plays a more important rôle in considering the most definite

subjects (spelling and arithmetic) and the least definite (penmanship, drawing, and English composition).

3. Mixed scales or tests; where both the judgment and ratio methods are employed in subjects ranging between the extremes of definiteness, (as in geography, history, and grammar) for which correct ratio scales must be worked out.

"The movement for measurement is merely an application of scientific methods to the study of educational problems." The question is: whether or not tests and scales "are of value to superintendents and teachers generally." In reply to this question many objections have been offered:—

1. The standards are defective—there is need to standardize the standards.
2. Too much time and energy may be spent in performing the tests, or at least in overdoing it.
3. The testing interferes with school work, and makes all uncomfortable; nevertheless the value of such testing appears, if it leads to definite facts and results.
4. The teacher is not trained to it, does not know how to employ the tests, may secure merely useless data; or may over-emphasize the branch in which testing is made to the neglect of other branches in which testing is not employed. Intensive work of one group upon a certain branch may distract from the other branches; but the teacher must see that the other branches are not neglected. Teachers must not set too high a standard by over-emphasizing particular branches, for there is no justifiable reason for speeding up in one branch at the expense of others. In fact, there should not be any speeding up before the fourth grade at least.
5. Teachers usually do not know which tests are best, but a detailed study of individual tests soon informs the teacher concerning the particular purpose and application of a special scale to given conditions, pupils, or groups of pupils.
6. The best teachers are selected to instruct the abnormal pupils. That is not the case as regards these standard tests of school products, for the tests are submitted by the regular teachers to all the pupils of their group.
7. The tests are determined by traditional psychology, by past theories. Such is not the case, for they are born of practice rather than of abstract theory.

8. The employment of standards may lead to the disregard of the value of grades and the teacher's personal estimate. This is not true, for the results of the use of standards may mean very little, or may give rise to many errors, if the other helps are entirely disregarded.
9. They tend to uniformity. The one great weakness of the tests and scales is that the tests result in the standardizing of the individual pupil. They aim at the attainment of a grade of work rather than establishing units of work. Promotion is a transfer to other levels of work, and should be made with due consideration to age and units of work done. The purpose of tests is to establish a median level which agrees with the average of growth over a long period, and then group pupils and promote pupils as tested. No promotion is determined on the basis of the test, but the teacher does promote when he sees a pupil bright along all lines; or when a pupil manifests special ability the work may be fitted to his ability.
10. These tests aim at the standardizing of pupils, and may lead to the making of many classes, at great financial outlay. There should also be a standardizing of subjects. The characteristics manifested by pupils at certain ages should be discovered, and then such subject matter selected as is best adapted to the nature of the pupil during such periods; and especially should standardizing studies go hand in hand with standardizing pupils in the seventh and eighth grades.

Instead of many institutions trying to do the work of standardizing tests, a department of research should be created in the school of education of a university, preferably a state university. Such a department should cooperate with the state superintendent of public instruction, so that all the forces under the immediate control of the state could be unified for economical and efficient work, both in devising scales and standards, and in formulating directions for the practical testing of them by public school teachers. Within the university, students of education, who should be chiefly graduate students, can be trained to a proper conception of the importance of the work, and can be given such knowledge of the technique of standard tests and scales, as will enable them to devise new standards and to test them in a specific and practical way within the state.

Just as there is in many state universities an agricultural extension department to carry on the work of instructing farmers, so there

should be an educational extension department, organized to carry on this work so important to the school system and so vital to the highest welfare of the state. Such a department could send out trained students of education to assist in breaking down opposition, in creating a correct attitude towards tests, and in developing a proper conception of the value of standardized tests and scales. It may also train the teachers to use the tests intelligently and effectively. There is great need of wise direction of testing in a definite, purposive way. There is danger in an excessive number of measurements unless sufficient directions are given to the teacher employing the tests. After the teachers have secured the data in their school laboratory, instructions should be given relative to a proper procedure in examining the results and diagnosing and correcting weaknesses. It is very difficult to find causes and to correct them.

The university may then test all the results. In fact, the school of education should be a clearing-house and repository for records of results obtained within the state, and also a distributor of the conclusions drawn from a large body of definite facts. State-wide tests continued over a long period of time may in this way be coordinated and made most valuable to the schools of the state.

Superintendents, principals and teachers, who are at present indifferent to this work, will soon discover the value of systematic cooperation, when they are shown the reasonableness of the procedure and its practical value to them. They naturally do not like to be annoyed by many different institutions which seek permission to send ill-trained investigators into their schools.

The only way to get a teacher to know how to use the scale is to have him use it in his own laboratory—the school room. It is not sufficient merely to tell him how to use it. There is need of a psychological clinic conducted by regular instructors, so that scientific training may be given under controlled conditions. It is unwise to use more than one scale at a time, or to emphasize too many points at once. The scales should be used over a long period of time. Theories will not always work out in detail, especially over a short period.

The teacher must “not only directly measure ability to give information,” but also “indirectly measure ability of a general sort, including the power to think.” The practicability of indirect measurement is clearly evident although errors may appear.

In order to prevent error, as far as possible, Courtis¹ advises the standardizing of standards by analyzing and controlling the factors involved, and recommends the following procedure:

¹ Courtis, S. A. Outline of Standardization of Teachers' Examination

Factors involved; as illustrated in a reading test.

"A. Mechanical factors.

1. Structure of sentence.
2. Length of sentence.
3. Size of type.
4. Spacing.
5. Length and character of the line.
6. Position (upside down, or not).
7. Difficulties due to word recognition.

"B. Content factors.

1. Familiarity.
2. Incentive.
3. Content and experience factor. Difficulty of word determined by frequency and recency of use, interest, emotional atmosphere surrounding conditions of use.
4. Need of an analysis of the vocabulary of children in terms of frequency and conditions of use.
5. Final test of equal units is reaction of unselected groups of children.

"C. Condition factors.

1. Testing conditions.

- (1) Incentive; instructions, examiner, manner.
- (2) Timing and length of tests; accuracy, fatigue, distribution.
- (3) Physical conditions; light, heat, paper, ink, etc.

2. Scoring and tabulation.

- (1) Objective marking; approximate methods.
- (2) Need of simplicity.
- (3) Judgment scales subject to change. The actual constructing and testing of conditions is a scientific activity, and involves a real problem; for it is a great task to devise on a scientific basis tests and examinations that are valid and capable of administration by class room teachers, and unless those factors are present, measurements will prove ineffective, except for supervision purposes."

While these standards are for school use, their demands should be higher than the standards society requires; for it is hardly possible that pupils will be trained above the necessary level of actual life.

Many conclusions were brought out in the discussion of aims and purposes. The following is a brief summary:

1. School communities secure better results in the treatment of fundamental branches where scales have been used.
2. A decided improvement in teaching is to be noted.
3. A large body of definite fact is secured.
4. There is a reduction of the average running expenses in teaching, and also in management.
5. The need of scales for all subjects has been demonstrated.
6. A correlation may be established among pupils who are tested in several branches, as in reading, writing, and spelling.
7. The variability seen in the teacher's estimate of a pupil's progress is reduced to a minimum.
8. Pupils, teachers, and community, are incited to greater interest in the subjects tested. This interest should be communicated to other branches where tests are not already employed.

REVIEWS AND CRITICISM.

Schools and Classes for Exceptional Children. By David Mitchell. Cleveland: Survey Committee of the Cleveland Foundation, 1916. Pp. 122. (The Educational Survey, Leonard P. Ayres, Director.)

This is one of the twenty-five sections of the report of the Educational Survey of Cleveland, conducted in 1915. Twenty-three of these sections are to be published as separate monographs; in addition there will be a larger volume giving a summary of the findings and recommendations relating to the regular work of the public schools, and a second volume on industrial education. In the present monograph Dr. Mitchell divides his discussion under seven heads,—I. Provision for exceptional children in Cleveland; II. Why we have special classes; III. The socially competent; IV. The socially incompetent; V. The selection of feeble-minded children; VI. What should be done for the feeble-minded; VII. Summary and conclusions.

"Cleveland," observes Dr. Mitchell, "has been a pioneer in providing advantages for children who did not fit into the regular grades. In more than one instance this city had the first class of a type in the country. That other cities have been given the credit for the first organization is probably due to the fact that in Cleveland successive reorganizations have tended to disrupt the continuity of the work."

Dr. Mitchell found that "In Cleveland 22,275 children have been in the schools at least one year longer than should have been necessary for them to reach the grades in which we find them. Of these children, 6731 have repeated two years of their school life. Some are behind as many as four, five, or six years." He would divide the exceptional children into two groups by the criterion of social fitness,—"Can a child be educated for self-support and an independent existence in the community? If so, he is socially competent. If not, he is socially incompetent." He recommends, "The socially competent should be placed in special classes in the regular schools, to be trained for association with normal people. The socially incompetent should be sent to special schools to be trained for permanent segregation."

Taking up first the various groups of the socially competent, Dr. Mitchell says, "The 'Cleveland plan' for the instruction of the blind is highly desirable and should be continued. A division for the instruction of the blind and semi-blind, under the direction of a supervisor, should be created. Many more children should be included in these classes. . . . In dealing with the deaf child Cleveland should follow the same progressive plan which is followed in the treatment of the blind. . . . The organization of special classes in regular schools should be fundamental to further plans for the crippled. . . . By providing open air rooms in the regular schools Cleveland has adopted the wise method of educating together those who must live and work together. The success of the children is sufficient to warrant the extension of the opportunity to all who might profit by it."

In 1901 the first "steamer" class was organized in Cleveland. The purpose of the "steamer" class Dr. Mitchell explains to be "the rapid acquirement of

the English language. The progress of the children amply justifies the expense of all advantages given to them. The advantages should be given to every child who does not speak English. The work of the classes should not be handicapped by the presence of feeble-minded children."

"No provision has yet been made for the children with defective speech. Probably more than 1000 Cleveland children require special speech training. Speech classes should be organized in many schools. The teacher should be a qualified articulation teacher, with special training in pedagogy and psychology. . . . No feeble-minded children should be admitted to these classes."

"Restoration classes," Dr. Mitchell recommends, "should provide opportunity for the retarded to advance, and for the doubtful ones to prove their ability. The teachers of these classes must be among the very best in the school system and because of this should receive extra compensation." With regard to incorrigibles he says, "The present school is doing excellent work, but the treatment of these children requires a more social point of view. Special classes where the children would not be altogether separated from other types of children should be tried. A diagnosis of mental status should precede transfer to a class for incorrigibles."

"The socially incompetent are the insane, the epileptic, and the feeble-minded. Socially the epileptic do not differ from the feeble-minded. Lack of ability for self-maintenance distinguishes the feeble-minded from the normal. It is high time to discover the reasons for the excessive retardation of 2000 Cleveland school children. . . . For socially incompetent children Cleveland has organized different types of classes. . . . It is probable that a considerable number of feeble-minded are still in the regular grades. . . . For many of the children the expenditure is out of all proportion to the results obtained."

In Chapter V Dr. Mitchell discusses the selection of the feeble-minded as conducted at present by the Division of Medical Inspection. He explains why the Binet tests as used in Cleveland are inadequate, and mentions some of the many other tests which might give further information essential to a sound diagnosis of mental status. "The person who conducts the mental tests," he believes, "should be thoroughly competent in that work. . . . Competency in this field involves ability to use a wide range of psychological tests and measures and a grounding in the theory and practice of applied psychology so thorough as to equip the psychologist to keep fully abreast of the important developments rapidly taking place in this branch of science. At the present time no one possessing these qualifications is in the employ of the Cleveland Board of Education. . . . The only difference between the normal and the feeble-minded is that in the case of the latter the limitations are an insuperable barrier to the maintenance of an independent existence. With the acceptance of this notion there is eliminated any serious contention that the medical practitioner is the only qualified diagnostician of mental status. . . . The physician who has not had a training supplementary to the standard course in the medical school is in the same relation to the problem of feeble-mindedness that the student with the regular arts course in the college is to the problems of the medical sciences. Diagnosis of mental status should be made by a clinical psychologist." Dr. Mitchell recommends the organization of a Division of

Examinations, with a clinical psychologist as head, who will take all responsibility for the activities which lead to the segregation of a child. The department should cooperate with the present Division of Medical Inspection, which would continue to make the physical examinations. Trained social workers would be needed to investigate the home environment, and a recorder to keep the permanent records.

"The feeble-minded may be divided," says Dr. Mitchell, "into three main groups. The individuals of each group should be trained in the things for which they have ability. . . . The abilities of the pupils should determine the type of teachers who would be selected for the different classes." He discusses the cost of an institution for the feeble-minded, comparing data furnished by the training schools at Vineland, N. J., and Waverly, Mass. He concludes, "For the welfare of society all the feeble-minded should be permanently segregated when they reach maturity. Cleveland is in a favorable position for the beginning of an institution. . . . Many parents would be glad to be relieved of responsibility for the care of these unfortunates."

All the recommendations are once more summarized in the final chapter, in a way which makes the findings of the report available for quick reference.

A. T.

NEWS AND COMMENT.

Dental Hygienists.

A monograph of the Department of Health of the City of New York states that it is safe to assume that not less than 90 per cent (832,500) of school children of the city are in need of dental treatment. It may be said that this situation is due to imperfect tooth structure, the causes of which lie partly at least in prenatal malhygiene, improper feeding of children, lack of cleansing, and neglect to prevent progressive decay by early professional treatment. The insidious character of tooth decay and disease is becoming increasingly apparent from the scientific relationships being drawn between oral malhygiene and disease.

There are hardly enough licensed dentists to repair the dental ills of the school population alone. This situation, engaging the attention of school hygienists, has directed attention to new means of attacking this problem. It was apparent that little was to be expected from curative channels in any effective program of action. Prevention is the keynote of modern health work. Inasmuch as the prophylactic principles of dentistry are defined, it was patent that the solution lay in this direction.

For some time Dr. Alfred C. Fones of Bridgeport had been successfully experimenting in the use of so-called "dental hygienists" or specially trained women who give surface treatment to the teeth of school children. Last spring Dr. Philip Van Ingen, chairman of the Committee on Child Hygiene of the Advisory Council of the Health Department of New York, in conference with the Health Commissioner appointed a committee to study, report and recommend as to the desirability of utilizing dental hygienists in New York. The

Committee held a number of meetings, and on February 8, 1916, submitted the following unanimously:

"The sub-committee on dental hygienists held three meetings, at which time the question of dental hygienists was thoroughly discussed. The committee now begs leave respectfully to report that a trial of surface cleansing of teeth of school children with accompanying instruction in oral hygiene be commenced at the earliest possible moment in one or more centers, preferably public schools, provided that the work be done by specially and adequately trained persons and under the supervision of competent directors."

On February 17, 1916, the whole Committee on Child Hygiene of the Advisory Council ratified the report and recommendations of the sub-committee. Dr. Haven Emerson, Commissioner of Health, has evidenced the keenest interest in this work and it appears probable that at an early date some nurses will be assigned to this work.

At one time there appeared to be some question as to the legality of employing dental hygienists. The question was submitted to the Corporation Counsel by the Health Commissioner who reported that there is nothing in the dental law to prevent the use of dental hygienists. In order, however, to avoid any possibility of untrained persons entering upon the work without proper legal safeguards to prevent fraud, inefficiency, and exploitation, there has been introduced in the legislature a bill (Senate Bill No. 391) the provisions of which on this subject are as follows:

"Any dental dispensary or infirmary legally incorporated and registered by the regents, and maintaining a proper standard and equipment may establish a course of study in oral hygiene. All students upon entrance shall present evidence of attendance of one year in the high school, and may be *graduated in one year as dental hygienists*, upon complying with the preliminary requirements to examination by the board, which are:

"A. A fee of five dollars.

"B. Evidence that they are twenty years of age, a legal resident of the state of New York and of good moral character.

"C. That they have complied with and fulfilled the preliminary and professional requirements and the requirements of the statute.

"After having satisfactorily passed such examination they shall be registered and licensed as dental hygienists by the regents under such rules as the regents shall prescribe.

"Any licensed dentist, public institution, or school authorities may employ such licensed and registered dental hygienists. Such dental hygienists may remove lime deposits, accretions and stains from the exposed surfaces of the teeth, but shall not perform any other operation on the teeth or tissues of the mouth. They may operate in the office of any licensed dentist, or in any public institution or in the schools under the general direction or supervision of a licensed dentist, but nothing herein shall be construed as authorizing any dental hygienist performing any operation in the mouth without supervision. The regents may revoke the license of any licensed dentist who shall permit any dental hygienist operating under his supervision to perform any operation other than that permitted under the provisions of this section."

With these progressive steps taken, it is to be hoped that through prevention we will preclude the possibility of another generation of children growing up, 90 per cent of whom will be exposed to the havoc wrought by diseased and rotting teeth.

EDWARD F. BROWN,
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New York City Health Dept.*

Wassermann Reactions of Juvenile Delinquents.

The Bureau of Juvenile Research of Columbus, Ohio, has done a good piece of investigation in testing the blood of 365 juvenile delinquents by means of the Wassermann reaction. The report is presented by Dr. Thomas H. Haines, in the *Journal of the American Medical Association* for January 8, 1916. Dr. Walter A. Noble, of the Bureau of Juvenile Research, collected the blood specimens and also made the general physical examinations. Dr. Walter McKay, assistant physician of the Institution for Feeble-minded at Columbus, made the Wassermann tests. Of the children tested, 147 were in the Boys' Industrial School, and 218 in the Girls' Industrial Home; 34 boys and 42 girls gave positive or doubtful reactions. Nine of these boys and 20 girls were tested twice, and 8 girls were tested three times to confirm the diagnosis.

"In regard to the social status of these individuals," Dr. Haines says, "they were all cases committed to reform schools because of delinquencies of various sorts. . . . The distribution of offences in this group of delinquents yielding positive Wassermann reactions is not in any wise different from the distribution of these offences among the total number of admissions to these reform schools. The same may be said concerning the ages."

Dr. Haines touches a very weak point in the system of medical and social care of delinquent children when he says, "It is required by law that every person committed to a reform school shall have been examined by a physician, and be accompanied by a medical certificate." But out of 33 girls who yielded positive or doubtful Wassermann reactions, 13 had been "certified as being in good health. A physician's O.K. is put on each one of these 13 cases. In four cases vision is certified as impaired. . . . Out of 33 cases," continues Dr. Haines, "in which the Wassermann tests yielded definite evidence of syphilitic infection, only one girl is known to have had syphilis, one is thought to have had symptoms of the primary stage of syphilis, and in four cases there is question of venereal disorder. . . . This is certainly striking evidence both of the value of the Wassermann reaction in the study of such institution cases, and of the imperative need for its use. This value and this need are both in the service of the individual and for social protection. In no institution case should the person be allowed to go at large until the positive reaction has been changed to a negative."

After discussing the reflexes and other signs, Dr. Haines remarks, "It seems from these facts concerning the ages of the girls in question and the complaints on which they were sent to the reform schools, to be highly probable that many of these cases of syphilitic infection are acquired. . . . These girls have exposed themselves to such infection." But he cites a case of father and daughter, both

feeble-minded, with criminal tendencies and bad ancestry, who both yielded negative Wassermann reactions. "The possibility of immunity from syphilis," he comments, "must have consideration in these cases. This family certainly suggests the need of caution in attributing etiologic significance to syphilis in cases of feeble-mindedness." Indeed the close correspondence of the proportion of defective mental status in cases yielding positive reactions "to that of all persons coming to these institutions, seems to exclude congenital syphilis as a cause or associated cause of feeble-mindedness," but Dr. Haines adds, "The question must be left an open one." Cooperative work, he believes, "between clinicians, laboratory workers, and field workers, in institution cases, should clear up some of these mooted questions."

Everychild versus Lockstep Schooling.

The faculty of the San Francisco State Normal School, under the leadership of their president, Mr. Frederic Burk, have worked out a plan of individual instruction by which the wrongs inflicted upon "Everychild, a minor," by the old lockstep schooling are to be redressed. The plan is not a mere figment of an idealist's brain. It "has been in operation," we are told, "in the elementary department (first to eighth grades) of the San Francisco State Normal School for the past two years. Records of progress of each pupil have been kept and compiled." From these data the materials for a monograph of seventy pages have been drawn.

With much originality, this monograph presents its conclusions first. They are in brief:

I. "That the slowest pupils, in normal health of body and mind, will complete the usual eight grades of the elementary school in not more than seven years; that the fastest will finish in not more than five years."

II. "Practically all pupils will complete the course before they reach the ages at which they at present seek to leave the schools."

III. "That the individual system . . . does in fact give a thoroughness and efficiency to every pupil quite beyond any possibility of the lockstep schooling."

IV. "Individual instruction costs less than class instruction," by eliminating "the huge wastes inherent in the lockstep."

V. "The size of classes of 40 to 50 pupils will be automatically reduced to 25 to 30 under individual instruction which eliminates the repeaters, introduces acceleration, and economizes time in other ways."

This monograph is the sequel to one issued in the fall of 1913 under the title, "Lockstep Schooling and a Remedy." "To this condition as a chief cause," observes Mr. Burk, "was traced the retardation by which between 30 and 50 per cent of all pupils now in the schools of the United States have lost one, two, three and more years. To this condition was also traced the chief cause of the fact that over 60 per cent of all pupils in the United States leave school before they have completed the elementary grades, and are ushered into the struggle of life without the rudiments of education."

The elementary department of the normal school "has been attended by 500 to 600 children ranging from 6 to 16 years of age. Distinctly subnormal pupils,"

President Burk explains, "are not admitted, and in all statements it must be understood their absence is assumed." What has been done "during the past two years has been to determine the actual variation in the rates of progress of pupils when each pupil is permitted to learn at his own rate; to compile exercise books in the several school subjects; to make individual instruction in general practicable; and to invent and put into successful operation an administrative system under the special conditions of normal training schools."

"The devising of an administrative plan for city schools can only be worked out in a city school," but Mr. Burk has shown that "it can be accomplished, financially, with saving to the school treasury. . . . With trained and permanent teachers the problem of inventing an administrative system for individual instruction is *new*, but it certainly can not be difficult. . . . The adaptation of texts to make length of lessons elastically fit different pupils, promotion in each subject separately, the establishment of grade standards upon the basis of the slowest diligent pupil's rate of progress, and the adaptation of a report card to show the individual facts truthfully, constitute the chief mechanical devices for the operation of an individual system."

Educators who wish to know more about this remarkably progressive, humane, and yet economical development in school management, are referred to President Frederic Burk, San Francisco State Normal School, for a copy of the present and earlier monographs. The school also publishes a series of teachers' manuals and pupils' exercise books, and a "Pupils' self-instruction series adapted to the individual method of teaching."

New Journals in the Field of Delinquency.

From the Department of Research of the Whittier State School, Whittier, California, comes the first number of the *Journal of Delinquency*, "devoted to the scientific study of problems related to social conduct." The managing editor is Mr. J. Harold Williams, Director of Research at Whittier, and the associate editors are Dr. Arnold Gesell, Dr. H. H. Goddard, Dr. Thomas H. Haines, Dr. William Healy, and Professor Lewis M. Terman. Mr. Fred C. Nelles, Superintendent of the Whittier State School, contributes an introductory statement in which he says, "The harmonizing of juvenile research with clean-cut administrative ideas is the chief problem before us today. It is hoped that the *Journal* will prove of service in the exchange of ideas which have resulted from careful work."

Another new magazine with the title, "Crime and Punishment," has recently been launched in New York City.

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THE PRACTICAL IN EDUCATIONAL RESEARCH.*

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WHAT IS PRACTICAL?

From the beginning, demands for the practical have harassed the researchers in chemistry, physics, astronomy, or biology. Abundantly practical have been the ultimate results of a score of pioneer studies which were of only academic interest to our learned ancestors, and unheard of by the contemporaneous multitudes. What seems purely academic, theoretical, or even visionary to one generation or individual may be of demonstrated utility to another. To prove this, one needs only to trace the manufacture and present economic significance of drugs, pure food stuffs, anesthetics, dyes, metals; or of dynamos, motors, telephones and wireless—all electrical devices,—the steam engine, specialized factory machines, and the aeroplane; or of modern navigation; or of medicine, surgery, as well as of scientific agriculture. Philosophers easily show the impossibility of limiting rigidly the concept, *practical*. The practical in education is as difficult to define as it is in chemistry or geology. We mean by it generally something that is of immediate use in our mutual betterment. The idea of the practical can easily be degraded to that of expediency, or to subserviency to stronger power for selfish ends. Facts about certain school problems can be of great practical use to boards, superintendents, and the people.

MEN OF AFFAIRS EMPLOY RESEARCH.

In the presence of proof that a method of efficiency is helpful to all concerned, practical men of affairs are prone to adopt the efficiency method. Initiative in educational research cannot be credited as a rule to those who bother chiefly about units of college

*A paper prepared for the Round Table of Directors of Educational Research, Department of Superintendence, National Education Association, Detroit, Michigan, February 24, 1916.

entrance requirements, or about protecting the B.A. degree from the contamination of "practical" studies. It is pleasing to contemplate the recent unconditioned employment of good researchers by cities and boards—and by some with a reputation hitherto for political evils in education. The movement betokens disgust with old methods and a hopeful turning toward the light. The researcher in the schools is burdened with a heavy responsibility, that he may not dispel confidence in his method by inaccuracy or bias, that he may be helpful and constructive, rather than a wrecker without plans of rebuilding.

TYPICAL DIFFICULTIES OF PRACTICAL RESEARCH.

Formal attempts to apply systematically the methods of research to problems of public education are recent, and many difficulties, as of old, arise. The university man or woman with a wealth of information and with mental training and a heart to serve through research the children in our public schools, who plunges into such public service, may encounter discouragements such as these: Incredulity about practical values, questions to be solved too quickly, competitive exploitation of mediocrity, academic scorn from a few pedants and conservers of the narrower collegiate conventions, hostility or jealousies from those who pose as ultra-conservative, and sometimes there appears trickery, or persecution from the political type of pedagogue whether in public or private education, as soon as a measure of personal or professional success is achieved by the worker. It is perhaps only average human nature for some employes of schools to be proud of educational research when any published results of a study reflect upon them credit or prestige—and for them to swell with indignation, caution against "radicalism" and to show pernicious activity, when the truth may reflect disadvantageously upon them. Such trivial difficulties, however, may culminate in financial stress—felt when publications should be made, supplies or instruments purchased, assistants engaged, or when the salary budget is made up. Fortunately, the writer knows of no city or state school system where all of these school evils operate simultaneously. The increasing demand now being answered, to remove the schools from partisan politics, brightens the prospect before the competent worker in educational research.

It would not be difficult to recite incidents to show that these gloomy difficulties are punctuated with humor in the experience of some researchers. Attractive aspects of the work also appear to the researcher who enjoys, for its own sake, the endeavor to discover the

truth, and there is always as an allurements, the vision of multitudes of children who may be helped by the application of facts from a dry monograph.

FOUR ACTIVITIES NEEDED IN PUBLIC SCHOOLS.

Educational research is done by universities, or by cooperation of universities and public schools, or by independent foundations, or by public school systems. In small towns and cities it is desirable that the superintendent should be able to conduct routine researches. In the large cities the exacting demands of an executive nature upon the superintendent, and the complexity of the researches demanded, make it necessary for him and the board to relegate the work of research to a special department or bureau. This present paper refers especially to this type of organization.

We believe that if educational research is to be made quickly practical there must be more than the mere getting of facts. There are at least four classes of related activities, or steps, needful to make educational research practical. They are:

- (1) The accurate *getting* of the desired facts by researchers.
- (2) The careful *consideration* of the facts by boards and by superintendents.
- (3) The prompt *publication* of the facts upon mutual agreement of researcher, boards, and superintendents for the benefit of the people.
- (4) Appropriate *action* where consideration of facts reveals the necessity for remedial action.

The factors in each of these related steps in turn suggest at once why some educational researches have not been productive or practical.

(1) Chiefly facts, not mere opinions, or amateurish attempts, are desired. Standards of scholarship, training, compensation, and contract are essential if men and women of calibre, capable of research, are to do the work of obtaining facts. High grade clerks, book-keepers, librarians, Binet-testers—none of these people are competent to determine the essential facts to be sought in a complex school system, or to get the facts by approved methods, or to present them with force. The director of research should be one of the best trained men in a school system. We may look with suspicion and condemnation upon a school department of research which is at bottom a clerkship.

(2) Superintendents and boards have not time to read all the numerous reports placed upon their desks. Educational research fails where facts, however painstakingly gathered, are not weighed

and considered. Brevity and clearness of presentation, and speed in completing a study are necessary, lest it lose all interest save that of local history. If the researcher be competent and the study needful, scarcely anything is of greater importance to superintendents than the research report. Research work is not an administrative or executive function; therefore the best efforts will become impractical if the report lies idle for weeks, and if the busy members of the board and the people do not realize its content and importance because the report has not been brought properly to their attention.

(3) Mutual agreement between researcher and superior officer is a working basis for legitimate publicity. The spirit of cooperation, simple fairness, and courage to show the truth where good can be accomplished, are sufficient guides in this difficult question. As a rule the people of the United States are entitled to learn in a wise manner all of the facts about the public schools. General knowledge, rather than partisanship, or prejudice, or misinformation, is a powerful lever to effect practical results, after educational researches have been made.

(4) Cautious application or action in our schools upon the basis of research is peculiarly difficult to secure. Most of the work of research is barely begun; hosts of teachers in America are trained to observe a favorite method and rule from which it is difficult to depart. Tenure of office of persons who should, but will not, energize a school system, is often prolonged; financial deficits in city or state make impossible the needed action—or else supply an excuse for inaction, indifference, or political machination to hold fast to the present status.

Educational research will not meet the demand in the public mind for the practical unless all the above four steps of study and action are completed. If educational research should become a farce, or be manned by unequipped persons, either fledglings or veterans, who may or may not be self deceived; or if it is regarded as an advertising or publicity bureau to boost the school officials and divert attention from live issues; or if accuracy of fact-getting and fact-presentation is impossible—then the farce should end, for the same reason that graft should be extirpated wherever it shows itself in the public service. Where educational research is well done, but where the three steps to follow are not completed by the cooperation of researcher, superintendent, and board, and the public is not reached by reports and the press—in this case there is a situation needlessly impractical and itself deserving study. It would be interesting to diagnose the conditions regarding research in all of our cities, in order to ascertain which of the four steps or activities are weakest, and the causes involved.

PROBLEMS IN RESEARCH VARY.

The specific problems for educational research are manifold in degree of difficulty and of significance. Here is a brief list of kinds of problems which are of perennial interest, and research into which will be of practical value in typical American cities, if the four essential steps enumerated above are followed:

(A) Periodical accounting of the placement, or movements of classes and groups, of children according to the prevailing plan of organization and promotions. The accounting should reach the smallest divisions of every school in a system.

(B) Studies of all cases of elimination from the schools, through personal investigation.

(C) Studies of all cases of repeating the work of a grade.

(D) Intensive study of exceptional children by cooperating psychologist, physician, teacher, and social investigator.

(E) Measuring the results of courses of study and programs and methods by means of special tests in arithmetic, spelling, reading, drawing, writing, physical education, etc. Here, with moderation, can be utilized the resources of experimental pedagogy.

(F) Study of local industries and vocations with reference to education in the public schools, and with particular reference to trade and commercial courses, continuation and night schools.

(G) Special experimental studies of groups of delinquent children with reference to the best ameliorative and educational treatment.

(H) Administrative problems regarding the hygienic construction of school houses, the grading of teachers, the examination of text books, and the questions of organization and finance,—these offer possible fields of helpful study to departments of research properly equipped.

REASONABLE AUTONOMY NECESSARY.

A degree of reasonable autonomy in initiative and in the employment of assistants—an independence resting upon confidence in a researcher's ability and motive, rather than upon rigid rule, is basal for effective research work in a school system. Autonomy of this kind, exercising skill and a constructive spirit, can be of practical benefit to educational research. Educational research of the right kind should protect the child and serve ultimately nearly every department of the community. The researcher, or his department, should be able to attack various types of problems for the school system, such practical issues, for example, as are indicated above in the eight groups of problems. Of course, the purpose may vary from time to

time. The researcher may endeavor (1) to secure new facts, make new discoveries, or (2) to verify former researches, or (3) to find errors in existing doctrines or practices, or (4) merely to stimulate, by repeating well-known tests and measurements of materials and methods. He needs a rare combination of scientific training, patience, courage, capacity for drudgery, tact, and inherent interest in the children.

LOGICAL OUTCOME OF RESEARCH.

The practical outcome of educational research under fair conditions, whether the outcome be measured in terms of dollars, or in the economy of time and the increased welfare of pupils, will outweigh the cost of its maintenance. To preserve at once its scientific integrity and also to secure utilization of its potential value for the efficient administration of our increasingly complex school systems, while it survives the financial hardship of pioneer work, are three problems of educational research, from the director's point of view. When researchers under stress are able to maintain without blemish the scientific integrity of their work, while faithfully helping our teachers, superintendents, and boards to solve the baffling problems that multiply in modern school systems—then their positions should be accorded adequate recompense. Public approval will be theirs, and researchers of highest training and experience will not have to rock along on inadequate salaries. Then also will a high type of public school and university trained graduates be attracted to the work in increasing numbers. The present disposition of school boards, progressive superintendents, and of the public, to favor educational research upon a broad, adequate basis, in behalf of our thronging millions of children, is an encouraging sign in these troubled years of the world.

THE OUTLOOK FOR JAMES: A CLINIC TEACHER'S REPORT.

BY SARAH WARFIELD PARKER, A. B.

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It was a few months before his seventeenth birthday, when we first saw James. He stood awkwardly, with his right hand fussily buttoning and unbuttoning the bottom button of his coat. He seemed of normal size, without conspicuous stigmata, a boy who might have passed in a crowd for nothing more than a poor-spirited "sissy." An offensive breath, a malodorous body, and a dirty eruption spreading over his face, made him unattractive, but, sad to say, not abnormal. The bovine mildness of his expression shifted to something a shade less open as his brown eyes feebly refused to meet ours. The mouth was not wide, but the lips were thick and the tongue slipped over them constantly, leaving them moist and red. To add the finishing touch to this unprepossessing appearance, the boy lifted his hand weakly and dragged the fingers through his short, oily hair, so that straight wisps stuck out untidily at every angle.

James walked across the room with a queer, shuffling gait, thumping as though he walked in clogs. The right leg dragged as if it were weaker and possibly shorter. The grip of his hand too was weak, especially of the right. When he spoke the words came hesitatingly, often with a forced facetiousness that was vacuous and ineffective.

"Right hemiplegia; right hemiparesis remaining; apparently about 80 per cent of development and 60 per cent of power on right as compared with left." This was the diagnosis of James' physical condition. He came of a respected and well-to-do family, of parents apparently in good health. The meagre family history yields but one interesting item,—dysthyroidism in the mother's family. From the incomplete birth history, the hemiplegia would appear to be either natal or prenatal, or the result of uremic poisoning in the first two weeks after birth. James was the third child, the first being lost at seven months through a miscarriage, the second at the third month. In the third period of pregnancy, the mother was again threatened with a miscarriage at the third month, but carried the child over to the seventh month, when James was born prematurely. After two weeks, it was found that the child was suffering from uremic poisoning, and possibly from Bright's disease. At that time also, he had frequent convulsions. It was with

great difficulty that he was made to take food. The description of the baby in these first weeks is consistent with the symptoms of diplegia or hemiplegia, although a physician who examined the child at the end of the third week, stated that there was nothing organically wrong with him.

The convulsions did not leave him with any perceptible paralysis, but he was slow in walking and talking. When he was two years old, he began to walk, with great difficulty, however, in the use of the right leg. The trouble was ascribed to a shorter Achilles tendon, which was spliced when the boy was four or five years old, an expedient which only partly alleviated the difficulty.

After a mental examination by Dr. Lightner Witmer, James was referred to an oculist and a neurologist. The oculist reported: "His optic nerves, choroid, and retina are perfectly healthy, not even suspected of being pathological. There are no changes in the pupils, or extra-ocular muscles. He has binocular vision and the vision of each eye is practically normal." The neurologist reported a slight heart murmur and low blood pressure.

James was brought to Dr. Witmer shortly after the end of his sixteenth year, because he was not "getting on" in the second form of the Boys' Academy in his home city. The second form probably corresponds to the seventh or eighth grammar grade. In reality James would not have "got on" had he been in the third, or even the first grade. His mental deficiency was a result of the cerebral condition which produced James's hemiplegia,—“a defective development of the cellular elements of the cortical, and particularly of the pyramidal cells—not restricted to any one part of the brain but involving all parts of the hemispheres about equally.”¹

A review of some of the cerebral changes as indicated in Professor Eugenio Tanzi's chapter on "infantile cerebropathies" may help us to interpret James's defective reactions. Professor Tanzi² agrees with Dr. Sachs that in the greater number of cases, the pathological condition in infantile cerebropathies is not confined to the area immediately adjacent to the lesion, but spreads over a wider area by the effusion of blood throughout the cortex. He summarizes the anatomical disturbances as "atrophy of the nervous elements and excessive proliferation of the neuroglia."³ He

¹ Sachs, Bernhard, M.D. *A Treatise on the nervous diseases of children.* New York: William Wood & Co., 1895.

² Tanzi, Eugenio. *A Text book of mental diseases.* Translated from the Italian by W. Ford Robertson, M.D., and T. C. MacKenzie, M.D. New York: Robman Company, 1909. (Reprint 1911.) Pp. 444-471.

³ *Ibid.* p. 448.

states as his opinion, that the "associative centers are those most exposed to the first assault and to the further diffusion of the disease, for the reason that they present a mark which is more widely dispersed and collectively larger."¹ Prof. Tanzi describes the condition of the mental processes and the effect upon the character of cerebropathic patients. "The active army of the mind is composed of an abnormally small number of cells, which at the same time are poorly supplied with dendrites, badly nourished by an impoverished organism and poorly stimulated by a sense of bodily need; ideation is scanty and slow and has neither the occasion nor the power to increase its strength."² As a result, the majority of such patients "seem to be dominated by a profound apathy."³ They, "more than any others, exhibit characters of a negative nature, or of deficiency, such as want of affection, anideism, alalia, and inactivity. Their violence, tempers, and misdemeanors have an origin that is visceral, reflex, or instinctive rather than psychical."⁴

James's history would indicate that his is the type of hemiplegia in which the paralysis is slight and the psychical cerebroplegia very much greater. The physician admittedly can do little to remedy this. "As we have to deal in these conditions with morbid processes that profoundly damage the brain, which compromise the development of specific and irreplaceable elements, which destroy one part of the brain and arrest or prevent the development of the whole organ, it is obvious that medical intervention cannot effect much of value."⁵ It therefore devolves upon psychology to analyze the reactions which are the symptoms of this pathology, especially in relation to the learning process, in an effort to determine by what steps and to what extent, special training can repair the inefficiency of the cerebral mechanism.

James entered a small home school in the country, January, 7, 1915. At that time his behaviour corresponded to the description of the typical case of infantile cerebropathy,—apathy, delayed transmission of impulses along the sensory and motor tracts, defective association, and symptoms of slight alalia. These characteristics of behaviour had a common mechanical basis in the defective apparatus for sending the nerve currents from one cell to another,—i. e. ill-nourished cells without adequate energy and adequate receptive dendritic processes.

Apathetic James certainly was. He had no "spunk." He

¹ *Ibid.*, p. 445.

² *Ibid.*, p. 461.

³ *Ibid.*, p. 461.

⁴ *Ibid.*, p. 460.

⁵ *Ibid.*, p. 460.

knuckled under to the strongest, and he did it meekly, meanly. A boy might taunt him, call him "coward," "sissy"—there was no retort; but let that boy touch James in the merest good-humored tussle, and James trembled with hot, futile fury—that "visceral, reflex, or instinctive" anger of which Tanzi speaks. I have seen him thick-skinned, indifferent, under the coldest snub, and I have seen him trapped in the children's sand-pit at the seashore, wild, flushed, with teeth set. He rested in complacent satisfaction with his own clothes, his own family, his own mind, his own work. The cruellest thrusts of his teacher, directed in an effort to sting him into energetic action, did not stir him from his meek quiescence. Twice, when a sharp quick rap across the knuckles was tried as an experiment, James turned crimson and set himself to his work with grim energy.

No amount of training can lift him out of the sluggishness which is the direct symptom of his diseased brain. Thyroid extract given to him, three grains a day, for several months during 1915, produced a slight but yet perceptible quickening of energy. Hours of work in the garden with a hoe stirred him physically with the same minute but favorable result. These two factors can reduce but cannot cure his apathy. The value of attempts to stir James through his irritability to even slight physical stimulus is open to question. On the one hand, such access of energy is only momentary and may have no developmental effect. On the other hand, the sum of such stirrings may break the habit of mental inertia and contribute its quota to an awakening of energy. The signal of really hopeful effective improvement must be an impulse self-initiated. It will never come solely through the factors which we have in our control. All we can do is to stir his physical and mental organism to as much activity as we can stimulate, while we await, meanwhile, a more potent ally in the natural recuperative energy of the nerve tissues.

Speed is to be considered quite apart from apathy or lack of initiative. James's motor reactions are slow. It took him half an hour, working steadily and attentively, to fold and place on the table the scattered sheets of two Sunday newspapers. No test, nothing more than a minute's observation, is needed to convince one that he is painfully, distressingly slow. Here, however, there is chance for improvement under discipline. His purely motor reactions cannot be quickened, nor has he sufficient energy to be trained into alert readiness for a signal. But to his slowness is added deliberation. By insistent drill he can be made to eliminate some of the stupid useless movements and comments which delay his reactions. . . . "I am sorry to keep you so long, I had to turn this page. You see it had to go this way instead of that way." He will stand slouching in

the middle of the floor, muttering: "I'm going to try to hurry now—I shan't be long this time—I'm sorry that I'm so slow." James' slowness is a functional disability, but this deliberation is a habit which should respond to training.

A pack of eighty cards, consisting of ten suits of eight cards each, having printed on each respectively one of the ten form-board geometric figures, was used to determine by test this trainability of motor reactions. Duplicate figures were arranged in a given order and James was required to sort the cards as rapidly as possible upon the corresponding positions. This procedure was repeated ten times, the time of each sorting being recorded. The practice curve obtained is in a measure an index of how much increase of speed we can stimulate in James by motor training. This practice curve indicates that though of course, his gross rate is higher throughout than that of a normal adult, he responds markedly to practice. Therefore we may infer that discipline and drill will accomplish something to speed up his motor reactions. Reactions which follow processes involving simple psychic functions come less slowly than one might expect. James' reaction time has been tested only roughly, but the results give an impression of his responses.

SPEED TESTS.

Test 1, February 15, 1915. Woodworth and Wells,¹ Number Checking Test, a blank on which are printed 500 digits in ten rows of fifty each, so arranged that each digit occurs with equal frequency in each row. The subject is directed to draw a line through each cipher on the blank,—a test involving simple recognition and motor response.

COMPARATIVE TIME RECORD.

James—no errors.....	185 sec.
Imbecile (probably H. G. I.) (14 years).....	157 "
Moron (15 years).....	85 "
Range for six university students tested by Woodworth and Wells.....	50-100 "
Average for six university students tested by Woodworth and Wells.....	66½ "

Test 2, February 14, 1915. Woodworth and Wells, Color Naming Test,² a blank¹ on which fifty squares of red, yellow, blue, green and black are arranged in rows of ten. The entire blank is exposed and the subject names the colors in sequence as seen. This test involves recognition and voco-motor response.

¹Woodworth, R. S., and Wells, F. L., *Association Tests. Psychological Review* (Reprint), Vol. VIII, No. 5, December, 1911, pp. 24-29.

²*Ibid.*, pp. 49-52.

COMPARATIVE TIME RECORD.

James.....	45 sec.
Moron (15 years).....	35 "
Low grade imbecile (with verbal faculty highly developed)	75 "
Range for Woodworth and Wells' graduate students....	22-41 "

This test, repeated on May 30, 1915, when James showed an access of energy after a month at the sea shore, gave nearly the same result, 43 seconds.

Test 3, February 17, 1915. Woodworth and Wells' Form Naming Test, a blank similar to above with five geometrical forms substituted for color squares.

COMPARATIVE TIME RECORD.

James.....	80 sec.
Moron (15 years).....	60 "
Imbecile (probably H. G. I.).....	50 "
Range for Woodworth and Wells' graduate students(14)	31-60 "

A repetition of this test on May 30, 1915, showed a drop to 70 seconds—a gain of 10 seconds.

Test 4, May 31, 1915. Cylinder Test, a set of twenty wooden cylinders of graduated depth and diameter, to be replaced as rapidly as possible in their respective recesses in a circular wooden frame.

COMPARATIVE TIME RECORD.

	<i>1st trial</i>	<i>2d trial</i>	<i>3d trial</i>
James.....	70 sec.	43 sec.	80 sec.
Moron (15 years).....	74 "	53 "	50 "
H. G. I. (15 years).....	113 "	52 "	89 "
Adult I.....	53 "	33 "	30 "
Adult II.....	40 "	32 "	35 "

James's practice record for ten trials was (1) 70 sec.; (2) 43 sec.; (3) 80 sec.; (4) 99 sec.; (5) 73 sec.; (6) 74 sec.; (7) 66 sec.; (8) 61 sec.; (9) 49 sec.; (10) 55 sec. This record is significant in its unevenness and surprising in its occasional success in attaining normal speed.

Test 5, May 31, 1915. Peg Board, a wooden board in which are thirty-six round holes, and a tray containing in one compartment four dozen white pegs and in another compartment one dozen each of red, blue, green, and yellow pegs. The subject is first directed to fill the holes with white pegs as rapidly as possible.

COMPARATIVE RECORD.

James used left hand, placing one peg at a time; coordination scarcely fair; attention persistent; energy 1 (lowest) on a scale of

five; planful in that he placed pegs in an orderly way, row by row. Time 78 sec.

Moron (15 years) used two hands, taking up several pegs at a time; coordination fair but broken by nervous excitability; twisted the board, dropped pegs and wasted much energy; planful but not consistent; energy, nervous. Time 45 sec.

H. G. I. (15 years) used left hand..... 94 sec.
Adult I..... 36 "
Adult II..... 42 "

The subject is then directed to put in a row of red pegs. After carrying out this direction he is directed successively to put in a row of each one of the remaining colors.

James showed no defect in color discrimination. He understood and followed directions, and displayed more initiative than we were accustomed to expect of him, suggesting another color as soon as he had finished with the preceding one.

Test 6, May 9, 1915. Association Test, Carl G. Jung Association Blank,¹ a series of 100 words arranged by Carl G. Jung. The subject, seated with back to experimenter responds with any word suggested by stimulus word, and the reaction word is recorded.

The time between pronunciation of stimulus word by experimenter and hearing of response is taken by stop watch.

TIME RECORD.

Mean reaction time.....	3.4 sec.
Average deviation.....	1.5 "
Range.....	1.0-10.2 "

This reaction time is surprisingly normal. There are no comparative statistics available but I have the statement of a professor of psychology who has used this blank with several classes of university students, that the normal adult range is 0.8-3.2 with the mode at 1.4. It is especially remarkable that James does not show a wider deviation.

Test 7, January 23, 1915. Number of words pronounced in three minutes.

James.....	74 words
Moron (15 years).....	159 "
Imbecile (H. G. I.).....	47 "
Passing mark for 12 years (Binet).....	60 "
Binet record.....	218 "

James's record is slow but passable.

Test 8, May 9, 1915. Fifteen Minute Test, number of words written in fifteen minutes.

¹ Woodworth and Wells, *op. cit.*, pp. 50-51.

	NUMBER OF WORDS.					
	1 min.	2 min.	5 min.	8 min.	10 min.	15 min.
James.....	7	13	33	64	80	114
Moron (15 years)...	..	44	112	168	203	293

The slowness of James's thought expressed in motor reactions shows a bit more significantly here, but there is no startling evidence of the retardation of his mental activity until we find him grappling with a more complex problem. The nine tests described above are either simple free association tests, or tests involving simple recognition and association with a single motor reaction. In such tests James falls a little below the lowest average. In a controlled association test, such as the "easiest opposite" series of twenty words, arranged by Woodworth and Wells,¹ James fails. Out of twenty reactions, only four were correct responses. And in failing he was so slow that his reaction time is approximately five and a half times that of the middle or high grade imbecile with whom his record is compared, and eight times that of the moron mentioned above.

It is thus, when we come to the association of simple sequences and the purposeful selection of a correct response, that we come to the serious obstruction in James's mind, the psychic seat of his slow response to the problems with which he is daily confronted.

Tanzi states that the association areas are open to the most insidious attacks of hemiplegia. It is precisely in this function of association that we find James's most serious deficiency. To discuss understandingly the evidence of this defect, and to determine just what is the effect of this deficiency upon the learning process we must attempt a tentative analysis of that process itself.

There are probably three processes of mind fundamental to the learning process,—attention, imagination, and memory. Under the caption of attention, we must consider analytic and persistent concentration, and distribution of attention; under imagination, intensity and associability; under memory, trainability as measured by the number of repetitions necessary to fix an image, and retentiveness. These, subject to the direction of the volitional elements of mind, control and initiative, are the fundamental factors in the learning process.

From a pedagogical point of view, attention is the first to be considered, because it is the active element in education. When we say that a child must be prepared for school work, we mean that his attention must be trained. It is to that function of mind, that we either consciously or unconsciously direct our efforts. James needed

¹ Woodworth and Wells, *op. cit.*, pp. 59-60.

no such preparation for study. His attention was good. He had the capacity for analytic concentration,—that is to say, he could separate into component parts the sensational elements of his perception. This conclusion is based on daily observation; the quickness with which James singled out birds and flowers in the fields, the adequacy of his observations of pictures and maps. Perhaps to quote his descriptions of two pictures which he had observed minutely for sixty seconds, will indicate something of the evidences in behavior on which this inference is based. "I saw a large man and a little boy. The man's hair was dark and rough. He had a little twist on the top of it. His face was white. He had a blue coat on. You could not see his hands because they were in the pockets. He had a black vest under his coat. His trousers were black and white dotted-white with black dots. He had black boots on. The man was looking towards the little boy. The little boy was looking toward the man. The little boy's hair was dark and rough. His face was white. He had a blue suit on. His shoes were black."

"I saw a boy who had Scotch clothes on. He was holding up a cat in one hand. He had a Scotch plaid on—blue with white waist. His stockings were Scotch. His cap was Scotch, too—blue. His shoes were black, and the upper part white with buttons down both shoes. His hair looked shaggy. The back-ground was dark. I saw a thing which said *Valentine* in blue. Right across from the Scotch boy there was a little boy looking at the Scotch boy. His hair was dark. He had a blue suit on, and shoes. They were standing still. The Scotch boy was looking at the little boy and the little boy was looking at the Scotch boy."

To be sure, his pathological lethargy often prevented the volitional element of initiative from acting so as to use effectively this capacity for analytic concentration. He was lacking likewise in the ability to follow analysis with synthesis,—that is, to pass again from the state of concentration to the state of diffusion. That, I believe, however, is a process of associating part with part to form a whole and comes rather under the caption of association.

James's persistent concentration was equally good. He stuck to each task perseveringly without flagging of effort or interest. In distribution, likewise, there appeared no observable defect. He therefore had all the qualities of attention which are fundamental to the learning process.

Imagination we have chosen to discuss from two points of view, intensity, and associability. The intensity of James's images, especially visual, seemed to be normal. He remembered readily birds and flowers which he saw. He remembered accurately the

map which he studied. He could reproduce from his image simple designs made out of four design blocks.

The intensity of visual images was apparently of relatively high order. Auditory images were probably normal. He remembered and recognized bird calls without effort. Response to practice in motor training which we have discussed would indicate normal motor images. His voco-motor images, too, in all probability, were not defective, since he had no particular difficulty in remembering words and names. There was no evidence of defect in the intensity of imagination.

The subject of associability is to us the most important. We have to consider it in three divisions, although the third somewhat overlaps the first two:—(1) sequence in association, (2) logical relation in association, (3) recall.

Sequence in association involves what we commonly call memory span. It is the linking of images in simple series. In this first and simplest element of association James is deficient. The following shows his memory span to be approximately that of an eight year old child.

<i>Presentation</i>	<i>Visual</i>	<i>Auditory</i>
Digits	5	5
Letters	5	5
Monosyllables (disconnected) .....	..	4
Syllables in sentence .....	..	10-12
Colors	3	5
Symbols in sequence as (+ - \wedge O)	4	.

Logical relation in association is emphatically "controlled association." James's fairly good reaction time in the Jung Association Test and the ease with which he responded to the Kent and Rosanoff series of one hundred words,¹ would indicate that in relatively free association he is not conspicuously defective. We would conclude that his association areas are not so much inert as chaotic. When an ordered response is required, James's lack of control over his associations is striking. The time it takes to establish or attempt to establish such a control is shown in his extraordinarily long reaction time in response to the "easiest opposite" association test. The frequent failure of effort to establish that control appears in the character of the responses which follow:

¹ Kent, Grace Helen, and Rosanoff, A. J., M.D. A Study of association in insanity. *American Journal of Insanity*, Vol. LXVII, Nos. 1 and 2, 1910.

EASIEST OPPOSITE ASSOCIATION TEST.

<i>Stimulus</i>	<i>Reaction</i>
High	High—height
Summer	summer—hot
Out	out—in
White	white—"I can't do it."
Slow	slow—not slow—fast
Yes	said
Above	above—I can't
North	south
Top	top—tip
Wet	wet, damp
Good	good—worse
Rich	poor
Up	up—out
Front	side
Long	long—along
Hot	warm
East	west
Day	short
Big	high
Love	love—"why, just love."

Recall is itself nothing but controlled association—the ability to produce at will two or more images linked by sequence or logical relation. James was consequently distinctly weak in recall. A stimulus word seemed to be flung into a chaos of images, and it was only by happy accident that it met its mate. The answers to such a question as, "What body of water is south of Europe?" are typical. Sometimes it hit the group of images linked under the caption "body of water," and the response was Black Sea, or any other ocean or sea that immediately came to mind. Sometimes it penetrated to a smaller subdivision of ideas,—"body of water south of"—and the answer was Indian Ocean. Not until after many days of drill could one have any reasonable expectation of a correct answer.

In every phase of controlled association, James was extraordinarily weak. In memory there is no corresponding defect. A simple image is fixed without a great number of repetitions. It is the association of images that must be fixed by drill. In retentiveness, there is the same situation. James remembers well what is taught to him, but his mind seems a vast chaotic store of images linked in very elementary sequences, which are practically unassociated with each other.

It seems very probable that James has no fundamental mental defect other than that in the process of imagination which we call associability. That function is so essential, however, to the learning process, and his deficiency in it is so great, that our reduction of James's mental defects to a single process does not contribute to a hopeful prognosis. Only physiological strengthening of the brain cells will establish the stability of association tracts which can correct this condition. In training James, the most we can do is to attempt by drill to fix certain associations.

If this defect of association interferes so gravely with the simple acquirement of facts, it is only to be expected that it would affect even more gravely the higher phases of the learning process involved in reasoning. Probably analytic concentration of attention and controlled association, especially that type which we call logical relation are the chief constituent processes leading to the conclusion which we call reason. In the solution of every problem, there must be analysis and there must be synthesis—that is, constructive association.

We have presented certain instances of behavior from which we infer that James had the first element—analytic concentration—at least in relation to concrete perceptions and images. This type of concentration of attention varied inversely, as the material presented to consciousness became more general and abstract. The major part of the boy's defect in the faculty of reason, however, was due to his defect in constructive association.

In the description of the pictures, which have been used for illustrative material, we find a rather unusually minute selection of details, but not a sentence that describes the picture as a whole. He made no spontaneous effort to interpret the situation. In answer to questions he never showed that he understood what was happening. He could not construct the unit-details into a significant whole. In the same way, he failed to interpret the Binet pictures, receiving credit only for a type of description acceptable from a seven-year-old child. He could not construct a single sentence containing the three words,—*Paris, fortune, stream*, but presented instead three sentences:—"Paris is the capital of France and there I had my fortune told. There is a stream of water in France." Of course he could not reconstruct the jumbled sentences in the Binet test.

James was given in May the Trabue Language Scale A, which is essentially a completion test, consisting of sentences with omitted words to be filled in by the subject. He attempted sentences up to the seventh grade, but failed in one fourth grade, one fifth grade, one sixth grade, and one seventh grade sentence. This performance

gives him a mark of sixteen points, which according to Mr. Trabue's figures, ranks him with third grade children.

Woodworth and Wells, in their book on "Association Tests," publish three interesting and rather amusing blanks designed to test the ability of a subject to understand directions.¹ On one of the two simpler blanks (in which the reactions were based on relatively simple processes of association), James did very well. On the more difficult blank, where more of the element of selective attention and constructive association entered in, James's mark for comprehension was not above 50 per cent.

In the same way, James failed on all the Binet tests that depended upon an effort of reason, except in the simple problems of behavior, which a nine-year-old boy is supposed to pass. A record of his responses speaks for itself:

TEN YEAR OLD TEST III, DETECTING ABSURDITIES.

Q. "An unlucky bicycle rider fell on his head and was instantly killed; they took him to the hospital and fear that he cannot get well." What is foolish in that?

A. Why didn't they bandage his head as soon as he got there?

Q. "I have three brothers, Paul, Ernest, and myself." What is foolish in that?

A. He could have one more brother without counting himself.

Q. "The body of a young girl cut into eighteen pieces was found yesterday. People think that she killed herself." What is foolish in that?

A. How could she kill herself without a gun or a knife or there would be some man coming along that would kill her and be a little out of his head.

Q. "There was a railroad accident yesterday but not a serious one. Only 48 persons were killed."

A. There couldn't be a railroad accident unless the train ran over the bank or off a track. That might have killed 48 persons. That's all unless somebody wanted to kill them.

To the final question about the ill-luck of suicide on Friday, James could give no response. The whole series shows an effort to reason combined with inability to reconstruct effectively the situation indicated. He failed also on the series of five problems of action for the ten-year-old child, and was of course unable to explain the situation indicated in the final fifteen-year-old test:

Q. "My neighbor has just received some significant visits; one after another, a doctor, a lawyer, and a priest called. What is happening at my neighbor's?"

¹ Woodworth and Wells, *op. cit.*

A. Doctor there to help her, priest there to a dinner and lawyer because she wants to make some new laws.

The persistence of this inability to reason showed itself particularly when James was confronted with the simple problems of arithmetic. He is seventeen years old. He cannot make change. He cannot count the cost of three two-cent stamps and three one-cent stamps. On the morning of February 23, 1915, James was given four stamps, a number of pennies, and the problem,—“How much will four stamps cost at two cents each?” He was directed to *draw* four stamps and under each stamp to draw the number of pennies he must pay for it. This simple problem was given after six weeks practice in writing out solutions. This was the result:—“If I have 4 stamps then to make four stamps I will have to put with 2 stamps the difference between 4 stamps—2 stamps=2 stamps. Ans.”

On February 25, one half hour was taken to explain to him this example. with stamps and pennies before him. With the pile of eight pennies still on the desk in front of him, James wrote: “If I have 4 2-stamps then I must divide $4 \div 2 = 2$ pennies. Ans.”

The explanation of James's failure to “get on” in the second form, lies in this lack of control over association, showing itself in a grave defect in recall and in reasoning. It is easy to summarize exactly the extent of the consequent pedagogical retardation by outlining his school status. According to the diagnosis of the clinical examiner, according to the Binet tests, and according to his general school progress, James has, in the main, developed no further than the nine-year-old-child.

James, since he has normal kinaesthetic and visual images, has learned to write legibly but carelessly a handwriting worth perhaps 40 per cent by the Ayres Scale. He has learned to spell certainly no better than the third grade child. When he was first tested, January, 1915, with twenty words chosen at random from the first five years of Rice's Spelling Book, he made the following records.

Grade I.	95 per cent
II.	80 “ “
III.	80 “ “
IV.	65 “ “
V.	50 “ “

The types of error were four: (1) confusion, as “rageages” for *wages*; (2) omission, “conveent” for *convenient*; (3) phonetic, “exsalunt” for *excellent*; (4) inversion, “Adiartic” for *Adriatic*; “Scandinvania” for *Scandinavia*. This last was the prevailing type of error. James can *learn* to spell readily, especially if he sees

the words. It takes constant drill, however, to fix the letter order so that it will persist in spite of the confusion of association. This recurrence of inversion of letters is typical. All the letters are there, but you can never be sure in exactly what order they will come out. Leonard P. Ayres' "Scale for Measuring Ability in Spelling," which was published in April, 1915, offers a more accurate measure of James's efficiency in spelling. The Ayres Scale has a practical basis in the "thousand commonest words in English writing." According to this scale James has ability in spelling somewhat greater than that of the average fourth grade child. The following table compares his ability on June 2, 1915 with Mr. Ayres' standards for the Fourth Grade:

Column	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Fourth Grade.	100	100	100	100	100	100	99	98	96	94	92	88	84	79	73	66	58	50	..
James.....	100	100	100	100	100	94	96	100	92	100	100	94	93	89	72	73	66	53	43

James's reading is atrocious. It is not that, he doesn't know words. He has a good reading vocabulary, and with allowance for his defect in reasoning and in reconstructing the elements of a situation, his comprehension is good. But it is here more than anywhere else that we see the evidences of hemiplegic alalia,—that is, difficulty in articulation. In January, James's reading was almost unintelligible; he hesitated, repeated at least three-fourths of the words, and mis-called more than half. The slowness of the association of the word seen with muscular coordinations of speech is true alalia—a pathological condition beyond the boy's control. The major part of his bad reading, nevertheless, is a habit. In his effort to go faster than is physiologically possible, he jumped to the first idea that came, and more than 50 per cent of the words were mis-called. In his efforts to fill in the gaps, to gain time to make his coordinations for the next articulation, he repeated the words immediately preceding. Four months of drill, in which his teacher has sat through many painful hours listening to his halting, stuttering voice, have quite markedly improved his reading through the elimination in part of these long-established habits. There is nothing that pleases him more than to be allowed to read aloud, so that his interest is a positive ally in establishing by practise steadier habits of reading.

James' status in arithmetic is not encouraging. In fundamental processes he is slow but fairly accurate. The association sequences involved are simple enough for him to learn, and he knows them satisfactorily, subject however to an occasional characteristic slip

of association. In reasoning, obviously, his mark is zero. In January, the Courtis Arithmetic Tests were given to James but his motor reactions are so slow that his grading in the mechanical processes was scarcely a fair index of his capacity, though doubtless placing him justly on the efficiency scale. Of decimals, he knows something; of fractions, less.

The first composition James wrote in the school, January 15, 1915, carries in itself the evidence of his status in English composition:

"The Boy and the Wolf.

"A Little Shapard was keeping his flocks a little way out of the village. And he came rushing into the village crying a wolf was after one of is had lambs. And he ran for help and twice or three times the work men dropped is work and want to help him but when he got there they were only laugh at and nobody paid any heed to them. And they were though him of his joke and that was how he lost his flock."

The four months following showed a gradual improvement in sentence structure, the elimination of confused and careless constructions. He could write a letter or a diary, lucidly following sequence in time. There seemed to be little improvement, however, in his grasp of more complex associations and the ability to comprehend and reproduce the elements of a simple plot.

Of history and geography James had learned and retained a great deal, but knew nothing,—that is to say, his mind was stored with a vast number of facts wholly unassociated and all subject to the most amazing inaccuracy of recall. In these subjects, his training demanded not so much teaching as sorting and cataloguing. The attempt was made, first to bring some order into his jumble of geographic facts. This subject was chosen for several reasons. Geography was one of his pronounced interests; it was the subject of which he already knew most, and map study was a method of work which allowed us to use to the full his accurate concrete visual imagery.

The work met with a fair measure of success. James gradually came to be able mentally to select units from his very clear image of the map of Europe, and in the simplest way to recombine them with other units. This is the first element in reasoning, and in exercising it he was keeping alive that segment of the reasoning faculty which he possessed. The task of establishing ordered associations was necessarily a slow one because its basis was drill and patient repetition. At the end of four months, James knew thoroughly the most important facts about nine of the countries of Europe. In so far as effective associations could be established in

his unstable mind, they were established. There had been fixed a high probability of a correct response to questions relating to this mass of information, yet sometimes scattered through a long series of questions, the drilled association would fail to hold and each sequence would have its turn at failure.

The work in geography served further as a disciplinary exercise. The cholalic habit of repetition was almost entirely eliminated, and the unnecessary factors serving to lengthen reaction time minimized, so that three or four seconds was the standard reaction time in responding to questions.

A conclusion as to wise procedure in the further handling of this case must be based on a review of the situation outlined in the preceding pages.

James is a boy whose mental development has been so arrested by cerebropathic conditions, that in seventeen years his progress in school has been less than that of a normal nine-year-old child. The only functional defects seem to be a general lethargy, evidenced in apathy, a somewhat slow rate in motor reactions, and a lack of control over the association of images, gravely impairing the faculty of recall and reasoning.

Such a review suggests several recommendations:—(1) The continuation of thyroid extract and physical outdoor work to diminish James's physical and mental apathy; and keep him wholesomely occupied; (2) insistent discipline to eliminate faulty habits of deliberation, repetition, and useless reactions which reduce his speed; (3) patient drill to establish as many useful associations as possible; (4) mental work with such material (probably concrete visual) as will give maximum exercise to his partial faculty of reasoning, based on analytic concentration of attention and imperfect associability.

The future holds out to James no hope of normality, yet the outlook is not therefore necessarily unhappy. Out of doors, there is an attractive side of his nature,—albeit a bit feminine. To share his enthusiasm for birds and flowers, his pleasure in the sensations of the woods and fields, adds very genuinely to one's own pleasure in the out of doors. Indeed, I have yet to know the imbecile who has not his bit of human personality, by whom you are not enriched through that exchange which gives relish to every experience. James's life can be so arranged that he will have every opportunity for these congenial activities. His father owns a farm. The boy can be trained to do simple farm work, and on the farm he will find full enjoyment out of doors.

REVIEWS AND CRITICISM.

Nervous Children. By Beverly R. Tucker, M.D. Boston: Richard G. Badger, 1916. Pp. 147.

Dr. Tucker writes as a neurologist, but not for neurologists. What strikes most forcibly a student of psychology is his apparent failure to grasp the psychological problems of nervous and mentally deficient children, and his lack of any reference to the large and growing psychological literature on their training. His book has no bibliography, not even an index of names. Freud and Cornell he quotes, but he says nothing about Dr. Barr's work on "Mental Defectives," and Dr. Goddard he cites only to misspell his name in connection with a very inadequate reference to the Binet-Simon tests. No other tests are mentioned except medical ones. "Following chiefly Professor James," Dr. Tucker defines psychology as "the explanation of consciousness." In three pages he attempts to discuss sensation, perception, memory, imagination, habit, will, and emotion, and is moved candidly to admit, "In this chapter we have been very brief and very superficial." With the exceptions noted it would appear that like too many other conservative physicians, Dr. Tucker ignores the work of all but medical men.

Most of his advice to parents seems discreet and sound, especially with regard to sex hygiene. "Individual cases," he says, "will have to be worked out by those in control and to these it is right to say: be deliberate, wise, and cautious." But with regard to conduct one is led to the conclusion that Dr. Tucker believes a child had better not have been born, if he cannot be respectable.

Dr. Tucker is master of a fine literary style. His book will be found readable by nearly everyone, and may be an admirable "first book" for one who knows little about nervous children. That it can possibly serve alone as a source of information is not to be thought of. It might satisfy an idle curiosity, but it is by no means extensive enough or intensive enough to be used either as a text or as a reference.

A. T.

Games and Exercises for Mental Defectives. By Hilda A. Wrightson. Cambridge, Mass.: Caustic-Clafin Co., 1916. Pp. iii + 100.

Miss Wrightson has collected and arranged 115 simple games, "for use among mothers and teachers of feeble-minded children, the object being to help develop muscular control and to quicken the sense perceptions." She has grouped the games in three grades of difficulty, from the simplest to the most complex. "The most difficult among the exercises," she says, "could be mastered with ease by a normal child six years of age."

In giving general instructions for applying the exercises in work with mentally deficient children, Miss Wrightson emphasizes the essential principles to be observed, which are mainly these: (1) A spirit of play; (2) Simplicity in training; (3) One idea at a time; (4) The personality of the teacher, patient, cheerful, and optimistic; (5) Simple, fixed methods of procedure to develop concentration; (6) Always use the same form of signal in starting a game; (7) Competitive games to be played single file at first; (8) The play must be supervised at all times; (9) "Make all exercises as attractive as possible. Tension is disastrous;" (10) Not longer than one hour at a session. "Should a child be kept twenty minutes

at one exercise, more will be gained during the first five minutes than the latter fifteen minutes. A game played too many times in an effort to perfect it, loses its object."

Dr. Henry H. Goddard, of the Vineland Training School, contributes the preface, in which he says of Miss Wrightson and the games she has planned, "Her long experience with feeble-minded children is a guarantee of their usefulness and efficacy for the purpose."

"It should be fully appreciated by teachers, parents, and superintendents," he adds, "that the playing of these games is not 'mere play' but *definite training* of the best kind. In many cases there is little else to be done. . . . These games not only develop coordination and attention; manners and morals, self-control, altruism, patience, and many more desirable qualities are involved. What more can education do than develop to the limit of the individual's capacity these qualities which, possessed even in a small degree, will help to make him a social rather than an anti-social being!"

A. T.

NEWS AND COMMENT.

A Notable Experiment in Applied Psychology.

There will be opened on June 1, 1916, in affiliation with the Carnegie Institute of Technology, Pittsburgh, a Bureau of Salesmanship Research.

A fund amounting to \$75,000 for the support of the Bureau for the first five years has been provided by a group of business concerns to whose initiative the organization of the bureau is due. Among these cooperating concerns are the Westinghouse Electric and Manufacturing Company, the H. J. Heinz Company, the Armstrong Cork Company, the Equitable Life Assurance Society, the Ford Motor Company, the Carnegie Steel Company, and others. Offices, psychological laboratories, and equipment have been provided by the Carnegie Institute of Technology.

The aim of this bureau is to secure a broader basis of established fact for use in improving present methods of selecting and training salesmen, by accumulating and systematizing information concerning the methods now used by successful firms, by applying psychological tests to the analysis of the mental traits of successful and unsuccessful salesmen, by carrying on experiments in the selection and training of salesmen in cooperation with various firms, and by publishing the results of these studies through appropriate channels.

The activities of the bureau will be guided by a scientific staff, on which Dr. W. D. Scott, Professor of Psychology in Northwestern University, serves as director, and Professors W. V. Bingham (Carnegie Institute of Technology), J. B. Miner (Carnegie Institute of Technology), and G. M. Whipple (University of Illinois), will serve as cooperating psychologists. The scientific staff will comprise, in addition to the foregoing, a research assistant and several research fellows.

The fellowships, yielding from \$300 to \$500, will be awarded to graduate students of superior intellectual ability, personality and leadership, who intend to fit themselves for careers as employment managers and supervisors of per-

sonnel. There will be opportunity also for students of psychology who wish to prepare doctors' dissertations in the fields of mental tests, vocational analysis, statistical method, etc. Inquiries may be addressed to Prof. W. V. Bingham, Carnegie Institute of Technology, Pittsburgh, Pa.

Prizes offered for Research in Eugenics.

Mr. Casper L. Redfield delivered an address before the Chicago Medical Society on February 2, 1916, in which he announced money prizes amounting to one thousand dollars for pedigrees fulfilling certain conditions. Among other things Mr. Redfield said:

"If you will look in your dictionaries you will see that 'to acquire' means to obtain by effort, by exertion, by the performance of work. Hence an acquired character is a dynamic development of an organ obtained by exercising it. A mutilation is not an acquirement. When the tails of mice are amputated, the acquirement is in the muscles of the amputator, not in the mice.

"Mutilations are not inherited. If they were, human beings would be little more than heads and trunks covered with scars representing the mutilations their ancestors received. Lamarck told us that long ago, but those who pretend to give us information about his theory appear to be wholly ignorant of the matter. Lamarck also said very distinctly that the action of the environment upon the parent had no effect upon the offspring, a fact which shows that the literature about Lamarck's theory is largely rubbish.

"The strength or power of organs is developed by exercising them, and such a development is strictly an acquirement. In acquiring development by exercise, time is an element. A man who goes into a gymnasium acquires more development in a week than in a day; more in a month than in a week; and more in a year than in a month. Similarly, a man who performs mental labor gains more mental development in ten years than he does in one, and more in twenty years than he does in ten, and so on as long as mental development is a possibility.

"If an acquired development is to be inherited, the parent must make the acquirement first and get the offspring afterwards; not get the offspring first and make the acquirement afterwards. A rational consideration of that fact makes it evident that it is necessary to take into consideration the age of parents in any investigation involving the inheritance of acquirements. This I have done for many hundreds of eminent men and have published the results. Those results show that eminent men are usually produced by old fathers, and always by slow breeding extending over a century or more of time. The fact that the age of parents affects the quality of the progeny is now acknowledged, even by those who balk at the interpretation of that fact.

"The number of individual pedigrees of men, horses, dogs and cows which I have investigated and published now amounts to thousands, and they all show the same results. But it has been charged that I have used selected cases to support a preconceived theory, and have failed to give the facts in regard to contrary cases. The charge that I have given no contrary cases is true, and the reason it is true is because there is no such thing as a contrary case to be given. Doubt it? Well, I have deposited \$1000 with the American Genetic Association

of Washington to be paid out at their discretion when contrary cases are produced. This is divided into five sections.

"1. A prize of \$200 if it can be shown that an intellectually superior man was ever produced by breeding at the rate of four generations to the century.

"2. A second \$200 if any very great man (intellectually) was ever produced by breeding at the rate of three generations to the century. (The average for three generations is about 97 years).

"3. A third \$200 if improvement ever occurred in any kind of an animal when the amount of acquirement per generation for three generations was below the average or standard for the breed.

"4. A fourth \$200 if a decline in powers ever failed to follow acquirements below the standard.

"5. A fifth \$200 if there could be found any group of animals in which the improvement or decline in animal powers was not proportional to the amounts of acquirements in previous generations.

"This challenge is based squarely and unequivocally on the inheritance of acquirements, and the appeal is to facts of record. If those who deny the inheritance of acquirements have any foundation for their statements it will not be necessary for them to do any work to capture that money. All they will need to do is send in their evidence and make their claim. If they do not do so promptly, the public will have no difficulty in understanding the reason why. It will be either because they have never investigated the matter and know absolutely nothing about it, or because they have misrepresented the results of their investigations. In either case their statements are worthless."

Details of the offer may be had by applying to the American Genetic Association, Washington, D. C., or to Mr. C. L. Redfield, 525 Monadnock Block, Chicago, Ill.

Dependent Children examined Medically and Psychologically.

The New England Home for Little Wanderers in Boston, has just published a report by Dr. William R. P. Emerson of his medical examination of the first fifty children received since the inauguration of the plan October 1, 1915. "Each one," he says, "had previously been examined in a routine way and pronounced well, meaning that the child's heart, lungs, nervous system, etc., showed no evidence of disease. In other words, these children were considered mentally and physically able to attend school and engage in the recreation usual for normal children." A case of striking interest was a little girl five years of age who had been sent from another institution without history of any illness. "Forty-eight hours before admission," remarks Dr. Emerson, "she had been given a rather hasty examination in the evening by a physician who pronounced her free from any contagious disease and certified that her heart, lungs, and other vital organs were normal. On admission the child was examined under favorable conditions, namely, in a quiet room with a good light," and the following diagnoses were made: adenoids, pediculi capitis, otitis media, cerumen, eczema, enuresis, vulvo-vaginitis (gonococcus), and mental retardation of one year plus. "This case was exceptional," Dr. Emerson observes, "in the number and severity of the affections exhibited," nevertheless a chart shows that among the fifty children 187 defects requiring treatment were found.

Inspection of the diagnoses shows that these defects, even when slight, are by no means of minor significance to the children concerned. "The early detection of spinal curvature and of defective vision is," as Dr. Emerson notes, "of the greatest importance," and the correction of enuresis is "of consequence in the placing out of the child. Pathological processes as carious teeth, abscess of the gums and acute endocarditis endanger the life of the child, while contagious affections as intestinal parasites, pediculi, scabies, and vulvo-vaginitis are diseases from which well children have a right to be protected." He is fortunately able to add, "More than 75 per cent of these abnormal conditions are being remedied by proper treatment."

On the first of September Miss Rose M. Hardwick began giving mental examinations to children in the Home. She reports that "more than a hundred individuals have been studied," but she does not tell us by what method. It would be interesting to know what tests were used and how the various mental levels were distributed among these hundred cases. "A few," she says, "are unmistakably feeble-minded." A scientific report of the work which Miss Hardwick is doing would be very welcome. It would probably help in the introduction of clinical psychology into other homes and asylums where it is greatly needed.

Community Drama in St. Louis.

St. Louis will celebrate the Shakespeare tercentenary with an outdoor production of "As You Like It," June 5 to 11, inclusive, by a cast of 1000 persons, headed by Miss Margaret Anglin. A natural auditorium is being prepared in Forest Park with seats for 9912 people. The principals beside Miss Anglin will be professionals selected by her, but the other members of the cast will be St. Louis amateurs. Actors, dancers and singers from all sections of the city who wish to enter the cast are applying at the headquarters of the St. Louis Pageant Drama Association. The success of the association's new enterprise, from the standpoint of community interest, is already assured.

The play itself will have a setting in the form of an Elizabethan prologue and epilogue, to be enacted by three or four hundred persons, attired in costumes of Shakespeare's time, who before taking their places to view the play, will dance and sing. They then will be seated as a Shakespearian audience. The recent St. Louis visit of Cecil J. Sharp of London, an authority on English folk song and dancing, was arranged in order that the dancing and singing of these "Elizabethans" might be typical of the Shakespearian period.

The improvements for the "As You Like It" performances are to be permanent. By virtue of a special ordinance passed by the Board of Aldermen, the Pageant Drama Association is defraying all expenses in connection with the improvements and is to be permitted to charge admission, but after the Shakespearian celebration the auditorium is to become the property of the city without any outlay whatever by the city. Park Commissioner Nelson Cunliff, who also is chairman of the Committee on Stage and Auditorium of the Pageant Drama Association, has announced that the auditorium will be available for any form of wholesome entertainment to which no admission fee is charged and that several applications for such use of it already have been received.

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THE WITMER FORMBOARD.

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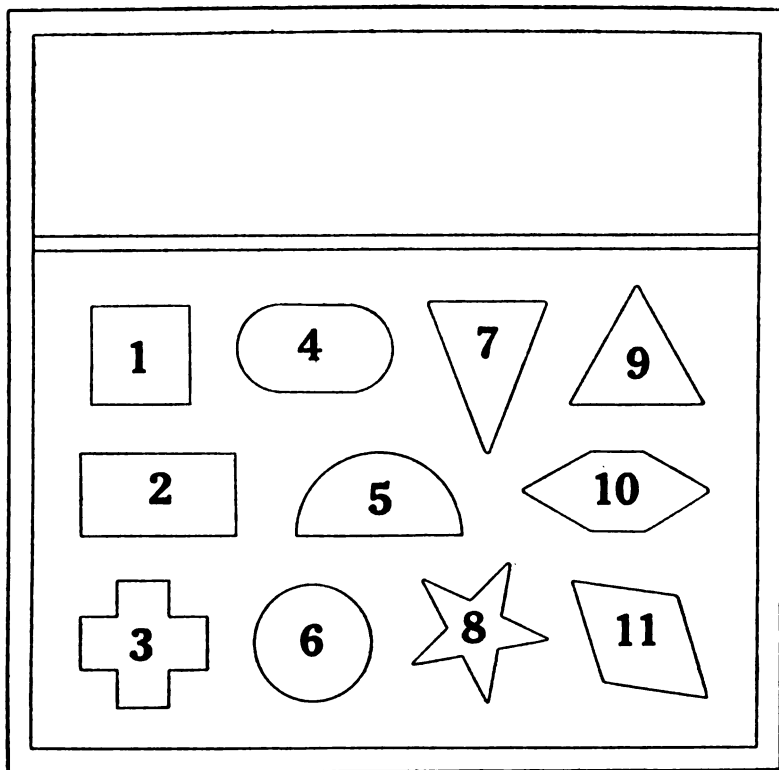
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In its various modifications the formboard is in general use among clinical psychologists, and appears to have won a permanent place among the tests to be regularly employed in clinical laboratories. It is a developmental outgrowth of the simpler contrivances first used by Itard and Seguin for training purposes.

The formboard used in this investigation differs in size, number, and arrangement of blocks from any heretofore described. It is Dr. Lightner Witmer's final modification of the formboard described and standardized by Dr. R. H. Sylvester [6]. The Witmer formboard was adopted to replace the older types, only after careful and extended experimentation in which many other variations in size, number, and arrangement of blocks were applied to children in the Psychological Clinic and to students in psychology at the University of Pennsylvania. It was the opinion of those concerned that this smaller board has all the advantages of the older and larger boards, and in addition has qualities which make it more desirable as a test. It is more attractive, looking like a toy or puzzle. Both boards were given to a number of children, alternating them on successive trials. When the children were asked which board they preferred, the answers were predominately in favor of the smaller board. This smaller board also makes a much more convenient piece of apparatus, as it does not take up so much store room and is very easily carried about. Moreover the addition of an extra block makes it a slightly more complicated test.

The Witmer formboard contains eleven geometrical figures as nearly uniform in size as their variety of form will allow. The square block in the upper left hand corner of the board is one and a half inches on a side by half an inch in thickness. All the blocks are the same thickness. The recess on the board corresponding to each block is just enough larger than the block to permit it to be fitted in loosely, i. e. easily without becoming wedged in place, yet

with but little play. The depth of each recess is one-half that of the blocks, so that the blocks when in place extend one-fourth of an inch above the surface of the board. The blocks and their recesses are of such size and shape that no block can be fitted into any recess other than its own; in other words, the board is self-correcting.



THE WITMER FORMBOARD.

The entire board, including the raised edge on each side three-eighths of an inch wide, is one foot square. The surrounding edge fits flush with the back of the board, but extends one-fourth of an inch above the face of the board or even with the blocks when in place. At the top a tray extends across the entire board, three and one-fourth inches wide and one-half inch deep, or as deep as the blocks are thick. Both board and blocks are neatly stained, the board being light oak and the blocks walnut, while the recesses are painted black. This produces an effective contrast between board, blocks, and recesses.

The tray at the top of the board is a receptacle for the blocks when removed from their recesses. It determines definitely where the blocks are to be placed and insures that they shall be within reach of the subject throughout the test. When the examiner wishes to carry the board with him from school to school, the entire face of the board may be covered by a lid made for the purpose. In this case the record blanks are carried in the tray.

It is only within the last few years that the formboard has been extensively used as a testing device. During its short history it has undergone many alterations and modifications, so that in its present form and appearance it is as remote from the original as the purpose it subserves, having been first used in training sub-normal children. In none of its developmental or final forms has a reliable and comprehensive standardization ever been carried to completion. A number have been attempted, several hundred children tested, and the results labeled "Standardization;" but without exception the range of variations has been entirely too large for the number of cases tested. The investigations thus conducted are, however, not to be discredited and pronounced valueless on this account. Their defect is one of omission rather than of commission. A complete and reliable standardization will require the testing of many thousand normal children and adults.

Perhaps the most constructive piece of work done with the formboard is that by Dr. Sylvester [6]. His standardization is subject to the criticisms made above, but certain features of his work have served as the basis for more recent investigations. In the first place he demonstrated the necessity of giving at least three trials. He showed that three trials were sufficient reliably to determine the subject's formboard ability and that more trials would be of little value, *i. e.* the time spent would be out of proportion to the accuracy gained [7]. In the second place he showed that of these three trials the shortest constitutes the most reliable single index of the subject's formboard ability. This does not mean that it is an infallible guide, but that on the whole it is more accurate than any other single feature, even than the average of three trials [8]. In the third place, he demonstrated that the number of errors made by normal children is too few to have value in the establishment of standards, and that their average shows no consistent correlation with age [9]. Another significant fact revealed by this same investigation is the negative correlation between age and the time required for replacing the blocks [10]. This clearly demonstrates the fundamental basis upon which a satisfactory standardization can be made. Other considerations discussed indicate that the

time feature of the test constitutes the only definite basis for the establishment of norms.

It is around this latter feature of the test that most of the experiments and discussions concerning the formboard center. It would take us too far afield to attempt a review of the literature now available on this topic. Aside from the standardizations, as they have been carried out so far, the above summary of Sylvester's work includes the important features now generally recognized. There are several minor investigations, but they do not advance beyond what Sylvester has done. As they merely serve to establish more fully the importance of the test, they will be referred to in the bibliography or in the text as occasion may require.

If now we turn from the past to the present and look to the future development of the formboard test, we see at once that most of the real work is yet to be done. We have not even a reliable age standardization at our command. It appears evident, as stated above, that an age standard is the easiest to establish, and so far as discovered is the only one possible at present. Attempts have been made and are being made to correlate formboard ability with other mental traits and capacities, but no conclusive results have yet been produced. This failure is, perhaps, due as much to the inadequacy of the method and the indefiniteness of the various mental traits and acquisitions with which correlation is attempted, as to any defect in the formboard test. We cannot hope to get significantly conclusive results from comparisons until the mental processes and traits compared are more precisely defined and proved to be simple and elementary, instead of complexes. Too often attempts are made to compare incommensurate qualities.

The considerations just summarized have prompted the present investigation and determined in general the scope of the work attempted. It was undertaken and completed as a preliminary and basic outline of a series of comprehensive investigations and reports to be made on this one test. The reasons for calling this a preliminary study and avoiding dogmatic conclusions and interpretations have steadily gained weight as work has progressed. Problems and possibilities were opened which indicate roughly the extent and character of the necessary future investigations for the establishment of reliable norms of even the simplest sort and for finality in any sense.

A glance at the distributions of the time records shows that the norms here established are only approximately correct, and that with two or three times as many records they might be considerably shifted. As in all preceding investigations, we shall also

see that there is a consistent negative correlation between time and age up to the ages of fifteen or sixteen at least. Up to the age of thirteen, half-year groupings are necessary. It is possible that further investigations will show these groups to be too large. A second conclusion for which we have considerable evidence, is that in general there is a sex difference in formboard ability in favor of the boys. At present we must be content with these generalizations. Just what the differences are from one age to the next and just how great the sex differences are, must be left for future investigators to determine experimentally.

Until age norms for the two sexes, separately, are more reliably determined, *i. e.* until these simplest of correlations have been made, other possible and attempted correlations must necessarily suffer a severe handicap. With age norms and sex differences established, we would have the essential material at our command to attempt other comparisons, such as formboard ability with class standing, with manual training, a mechanical turn of mind, or with vocational adaptation.

METHOD.

The test is presented by exactly the same method to all subjects, whether they be normal or defective, children or adults. Even though the conditions here outlined may appear trivial, they are in certain cases of great importance. If they are not carefully observed and standard conditions maintained throughout, a failure or poor record on the part of the subject may indicate the examiner's incompetency rather than the subject's inability. The sad thing about it is that in the permanent records, it is marked against the subject.

Height of the table. The height of the table upon which the board is placed is the only variable. This is to be suited to the convenience of the individual tested, the aim being to have the board at such a height that the subject can perform the test to the best advantage. It is necessary that he be able to look down upon the board. If he can barely see across the top, he is compelled to work at a disadvantage, as he cannot see the recesses properly and cannot use his arms and hands freely.

Position of board on table. The board is placed horizontally on the table with its lower edge (edge opposite tray) even with the edge of the table nearest the subject. It is very important that the board be kept in this position and be constantly watched. In his attempts to hurry, a subject will often move the board about considerably, sometimes getting it out over the edge of the table

where it may tip and fall to the floor, and sometimes pushing it back from the edge until only with difficulty can he reach the blocks in the tray.

Position of subject. The subject is always required to stand directly in front of the board throughout the test. In fact he is required to take a correct position with respect to the board before the directions for the first trial are given. This position is insisted upon, because it gives the subject more freedom than any other in moving about during the performance of the test. He can readily adapt his position to see to the best advantage both blocks and recesses, and has unlimited freedom in making the movements necessary to place the blocks quickly in their proper recesses by the use of either one or both hands. It also gives the experimenter opportunity to set the table and board in the best light and be sure the subject will not have to work in his own shadow. The subject should always have the advantage of the best light available.

The standard method. The subject is introduced to the test with as few directions as possible. The standard method gives all that it is necessary for him to know. It is purposely intended to throw the subject upon his own resources and allow him the greatest opportunity of showing what he is really able to do. He is given no negative or "Thou shalt not" directions. The directions are all positive and active. In no case is he given any help or suggestions other than those included in the standard directions. Inability to follow the standard directions or complete the test correctly without additional instruction constitutes a failure. These failures will be treated elsewhere as a separate investigation. The entire test consists of three trials given in as rapid succession as possible.

First trial. As soon as the experimenter knows who the subject is and the position has been taken before the board, he says to the subject, "I am going to take these blocks out and put them up here. I want to see how quickly you can put them back where they belong." While giving these directions the experimenter removes the blocks from their recesses and distributes them in a haphazard arrangement in the tray at the top of the board, *i. e.* he begins to remove the blocks at the same time he begins to speak, but usually finishes speaking before the blocks are all removed. Then after the blocks are all removed the experimenter continues the directions thus, "You may use both hands, and work just as fast as you can." This is generally sufficient to induce the subject to begin replacing the blocks at once. If he hesitates with an air of uncertainty, as if waiting for the "ready" signal, the experimenter may add, "You

may begin as soon as you are ready," or "Go ahead," or "All right," or "See how quickly you can put them in." If, however, these additional directions fail to bring an appropriate response, the test is considered a failure. If the subject goes to work at once, the time is recorded by means of a stop watch from the moment he touches the first block until the last block is set securely into its proper recess. For the test to be completed correctly all the blocks must be set down firmly in their respective recesses; but a trial may be accepted as correct if only one block is left lying loosely, but turned correctly upon its recess, providing the other ten are set in properly. It is advisable to encourage and assure the subject of his success by saying, "That's right," as soon as he has all the blocks correctly replaced.

Second trial. This follows the completion of the first trial immediately without comment of any kind whatever. On this trial the test is presented to every subject not only with the same directions, but with the blocks in a set arrangement. The general principle of this arrangement is that the blocks shall not come in regular order, and shall not when removed be in the tray directly above their respective recesses. Since the experimenter, in repeating the test, tends unconsciously to fall into the habit of removing the blocks always in a certain manner, it seemed advisable to determine the proper course of this habit before it was formed and thereby be assured that it will not defeat its purpose. The following arrangement was therefore decided upon and rigidly followed:

The blocks are placed in the tray, arranged in three piles. One pile, set in the tray directly above recess number 1, contains blocks 5, 10, 7, and 8, numbering from the top of the pile downward. The second pile, placed in the middle of the tray, contains blocks 11, 2, and 9, numbering from the top downward. The third pile, placed in the tray directly above recess 9, contains blocks 1, 6, 4, and 3, numbering from the top downward. The blocks of each pile are picked up or removed from the recesses with one hand by taking them in the order of their numbers, as indicated above. Thus the first pile is formed by picking out block 5 and placing it on block 10, then picking up these two and placing them on block 7, then these three and placing them on block 8, and last of all picking up all four and placing them in the tray directly above recess number 1.

While the blocks are being removed in the manner described above, the experimenter says, "Now I am going to take the blocks out in this order (or a definite order) and I want to see if you can't put them in quicker." Then when the blocks are all removed,

he spurs the subject on thus, "Now see how quickly you can put them in." The time is recorded in exactly the same manner as on the first trial. Unless all the blocks are correctly replaced without further suggestion the test is recorded as a failure.

Third trial. As soon as all the blocks are correctly replaced on the second trial, the following directions are given, "Now (or this time) you may take the blocks out to suit yourself, and see if you can't put them in still quicker." The subject is given unlimited freedom in the removal of the blocks and their arrangement, with the single exception that he is required to place them in the tray. As soon as he has removed all the blocks, he is urged to do his best by saying, "Now see how quickly you can replace them (or put them in)." The time is again taken as on the first trial, and the test is complete.

QUANTITATIVE TREATMENT.

Exactly the same method was employed in securing all the records treated in this monograph, and as far as uniformity can be obtained, the records of all the children tested are comparable. For various reasons beyond the control of the author, he cannot be personally responsible for the reliability of all the adult records, although he believes the errors are small, perhaps negligible.

The distinction between children and adults in this treatment is arbitrary, but justifiable. All college students and public school teachers are considered adults regardless of age. They make up nearly the entire adult group. Its age limits are very wide—from sixteen to sixty years.

All pupils of the public schools are considered as children, and are grouped according to sex and age. The children of this investigation constitute an unselected group of pupils from the regular classes of the Philadelphia public elementary schools. *Unselected* means that there was no selection on the part of the examiner, and that he tested all the children from the regular classes in those schools in which he did his testing. The schools in which the testing was done lie in two very different sections of the city. Of the first sixteen hundred children tested, about 75 or 80 per cent are of foreign parentage and live in the poorer sections of the city. The last twelve hundred children tested, with the exception of about 3 or 4 per cent, are of American parentage of the professional classes and live in one of the best sections of the city. These different sections were chosen in an effort to make the quantified results more typical and reliable.

Records eliminated. Although there was no selection of the

children to be tested, it was found necessary to make certain eliminations after the data had been collected. Eliminations were not made without abundant evidence of justification. In no case was a record excluded merely because the time record did not prove to be what the examiner expected.

The eliminations can roughly be divided into two general classes. The first contains those cases who failed to complete the test correctly without instructions other than the standard directions. These are eliminated because they failed to perform the test properly, and because the method of treating failures, that of giving the subjects help and then estimating the amount of help given, is unsatisfactory and does not lend itself to standardization. These cases are not comparable with those who did the test successfully, or even with one another. The only respect in which they are comparable is, that with a standard method and under standard conditions they failed to complete the test. Failure in this sense does not mean feeble-mindedness. Just what it indicates cannot be determined without more extensive investigation and study. The number of failures for each age is given at the top of the table of distributions. Of these failures, 72 per cent occurred on the first trial only, 12 per cent occurred on the second trial only, while 11 per cent occurred on both the first and second trials, the third trial being a success. Failure occurred for the first time on the third trial in about 3 per cent of the cases. Two children failed on all three trials.

The second group of eliminations contains the records thrown out entirely from the above group and from the group who completed the test correctly. It includes the records of four children whose ages could not be verified, of one boy whose vision was so defective that it interfered seriously with his performance, of two children diagnosed as not higher than borderline cases, and four children diagnosed as feeble-minded at the Psychological Clinic of the University of Pennsylvania.

As the result of questionable formboard performances, about twelve children have been examined at the Psychological Clinic. Of these, six, as indicated above, have been diagnosed as below normal, while the others have been pronounced normal. Of the six diagnosed as borderline cases and feeble-minded, three failed and required help on at least one trial of the formboard test. None of the other three failed on any trial, but completed it successfully. The shortest trial of the girl diagnosed as a borderline case was 6 seconds longer than the maximum for her age. The other two who completed it without failure, but were diagnosed as feeble-minded,

were boys. The shortest trial of the one was next to the longest record for his age; the shortest trial record of the other was within the upper or poorest 10 per cent for his age. It is therefore evident that some feeble-minded children may pass the formboard test successfully, but so far as our experience goes do not win special honors. On the other hand, some normal children may fail to complete the test correctly on at least two of their three trials. This has been demonstrated by the fact that children who failed on the formboard test when it was given in the school have been diagnosed as normal by the Clinic. Of five such failures sent to the Clinic, and there diagnosed as normal, four failed on two of their three trials. It must be remembered that only those who made the worst failures were sent to the Clinic. Since some of those who make the worst failures prove normal, and some feeble-minded, our position is definitely established that we do not know the significance of failure, but that it does not necessarily mean feeble-mindedness. It appears that, if we must depend entirely upon time records or other quantifiable data in the treatment and interpretation of such cases, we are helpless.

SUCCESSFUL PERFORMANCES.

This group includes the records of all the public elementary school pupils in regular classes tested, except those eliminated in the preceding section. It also includes the records of 221 adults.

All the records are classified according to the sex and age of the subject. Up to the end of the twelfth year, the classifications are by half-year groups, after that to the end of the sixteenth year by year groups, and lastly those from seventeen to the beginning of the nineteenth year are thrown into one group. In the charts and tables each age group is designated by the middle value of the group. Thus the group headed 6.25 includes all the children who are six years old, but less than six years and six months old, *i. e.* it ends with the end of the fifth month. Those who are six years and six months old, but less than seven years of age come in the group headed 6.75. The 13.50 group contains all children thirteen years of age.

No record was kept of the number or character of errors made by these children. The work of other investigators already referred to, shows the futility of such records, especially for normal children. At no time during this investigation has the need of such a record been felt. It is much more important to consider why a child makes errors than merely to know what errors he makes. If the examiner gives his attention to the number and kind of errors, he cannot study the performance analytically while it is in progress.

The only data uniformly collected from the performances of all the subjects tested, were the time records for each of the three trials. In some of the cases a record was also kept of those who removed and replaced the blocks according to some plan on the third trial. This latter feature was noted in an endeavor to determine the advisability and possibility of standardizing qualitative factors. It was found impossible in many cases to decide whether a subject intended to plan or if he just happened to remove the blocks according to a plan. In reality the easiest way to remove the blocks happens to be the best plan.

The shortest of the three trials is taken as the index of an individual's formboard ability. This is generally taken by other investigators as the most reliable single index. It is easily determined and lends itself readily to statistical treatment. So far as this investigation goes, it distinctly supports the earlier formboard studies which establish and adopt this as the most satisfactory basis for standardization. The shortest trial is here taken as the basis for the quantitative treatment of results.

Tables I and II contain the distributions of the shortest trial time records for each age group; table I for boys and table II for girls. Across the top of the table, opposite F on the ordinate, are the number of failures for each age. They are given merely to show their relative frequencies and distribution. Otherwise they have no relation or significance in the tables of distribution or their quantification. The numbers in parentheses, across the bottom of the tables beneath the ages, show the number of cases in each age group included in the distributions. They do not include the failures indicated above. These tables show the distribution of the time records in the different ages and the general tendency for them to shift downward toward shorter times with the increasing age of the subjects. They also show that in several ages there is one extra long time record and that in several others the range of distribution is unusually narrow. The explanation of this latter condition lies in the fact that not enough children have been tested in any age group to determine reliably and definitely the range of distribution within which the records of all normal children fall. It appears, however, that enough cases are here presented to indicate in a general way the tendencies of the various age distributions and their central values.

The range of distribution is wider and the standard deviations are larger for the records collected in this investigation than for those reported by any other investigator. Two factors are largely responsible for these differences. In the first place, the standard

TABLE I.—DISTRIBUTION OF SHORTEST TRIAL TIME RECORDS OF 1474 BOYS.

F	5 6 9	4 14 6	11 4 5	2 4 1	1 1	1		
92		1						
67	1	1						
60								
59	1	1						
58		2						
57								
56								
55		2						
54		1						
53	1 1							
52								
51								
50	1	1						
49								
48		1						
47								
46		1	1	1				
45		2	1	1				
44		1	1	1				
43		1						
42	1		2	2				
41		1						
40			1					
39	1 2	1 2 4	1 1					
38	1	2	1					
37	1	3	1	1				
36	1	1	1	1	1			
35		3	2 2					
34		3	1					
33	1	3	2 3	1				
32	2	1 4 3	5 2	2				
31	1	1 2 4	4 3 4					
30		1 3 3	3 2	3 2	1	1		
29		2 4 3	4 2 1	2 2 2	1			
28		2 2 2	4 5 2	4	3 1			
27		5 5	3 2 4	3 1 1	1			
26	2	1 4	6 3 7	4 2 3	3	1	1	
25		1						
24		1 1	14 5 8	4 3	5	1	1	
23		1 9	4 2 6	2 1 1	3 1 2	1		
22		2 3	6 6 3	8 4 3	2 3 4	3 4	3 1	1
21	1	2 2	3 6 10	7 13 7	6 3 4	1 5	1 3	1
			6 8 2	6 6 6	3 3 4	2 3 3	7	
20		1	3 3 5	6 5 10	3 4 4	5 2 9	3 3 1	1
19			6 5	2 11 11	6 6 8	4 3 4	9 4 2	1
18			3 4	7 3 8	3 6 6	8 6 7	10 8 3	1
17			3 1	2 7 8	7 9 12	6 9 11	13 6 2	2
16			1 1	3 2 10	9 7 9	8 12 6	14 8 4	3
15			2 1	1 2 2	3 7 3	10 9 8	15 13 10	9
14				3 1 7	4 7 6	6 15 11	21 17 3	10
13				2 4 1	1 1 3	4 4 16	12 13 12	7
12					1 1 2	3 8 9	11 12 3	12
11					1 1 3	8 7 2	7 2	23
10					2	3 1	7 5 2	24
9						1	1 1	15
8							3	6
7								8
6								
(5)	4.25							
(6)	4.75							
(23)	5.25							
(24)	5.75							
(42)	6.25							
(60)	6.75							
(75)	7.25							
(73)	7.75							
(72)	8.25							
(72)	8.75							
(71)	9.25							
(68)	9.75							
(62)	10.25							
(65)	10.75							
(72)	11.25							
(63)	11.75							
(85)	12.25							
(85)	12.75							
(137)	13.50							
(101)	14.50							
(46)	15.50							
(8)	16.50							
(4)	18.00							
(121)	Adult							

Ordinate: Time in seconds.

Abscissa: Age, middle value of.

No. of failures per age (excluded).

Parentheses: No. per age in distribution.

TABLE II.—DISTRIBUTION OF SHORTEST TRIAL TIME RECORDS OF 1375 GIRLS.

F	8 11 12	5 16 12	7 10 5	3 1 2	3 1	2	1 1 2	
103	1							
86		1						
85	1							
76		1						
71		1						
56			1					
55		1						
54	1 1	1		1				
53		1						
52			1 1					
51								
50	1	1						
49		1						
48		1 1						
47	1 1	1						
46		1						
45		3	2					
44		1 1						
43	1	1 1	1 1 1					
42	1 1		1 1					
41		2						
40		1 1	1 2	1				
39			1 1					
38		1 1	1 1	1				
37	1 1	6 2	3		1			
36		1 1		1 1				
35	1 1 1	1 1 2	2 2 3	1				
34		1 1 1	2 2 1					
33	1	1 3 2	2 1 3	2 2 1		1		
32		1 1 3	2 2 4	2 2 1				
31	1 1	1 4 1	10 5 1	1	1	1		
30		1 3 3	4 4 1	2 2		2 2 1 1	1	
29		1 1	2 3 1	1 2		2 1 1		
28		1 1 3	5 6 2	1 1	1 3 2	1 2 1		
27		2 4 3	2 3 4	2 1 1	3 2	5 1 1	1 1	
26		3 1 5	6 7 2	4 1 2	2	4 5 1	1 1	
25		2	4 2 5	3 5 4	1 1 3	4 1 1 2	1 3 1	
24		1 2 1	5 6 8	6 7 2	6 1 1 2	3 2 1 1	2 2 1	
23		1 4	5 8 3	5 3 4	5 1 1 1	2 1 1 2	1 1 1	
22	1	1 3	2 1 12	10 4 7	5 2 6	2 1 4	6 3 2	1
21		1	5 5 3	11 7	4 7 1	4 5 4		
20		1	2 3 6	7 4 6	6 5 8	6 5 2	7 7 1	2
19			4 2 4	5 8 4	6 8 4	7 7 8	10 4 1	
18			2 1 4	6 6 11	5 14 8	9 14 11	17 5 1	1
17			2 4 4	4 6 6	10 6 6	8 10 7	17 6 2	
16			2 2	4 5 7	5 5 7	7 6 7	13 9 3	1 4 6
15			1	2 3 8	3 5 7	8 10 4	18 8 5	4 1 7
14				1 1 1	5 3 11	4 11 7	15 6 6	4 1 6
13				1	2 1 3	7 10 9	12 8 3	1 1 17
12					3 2 2	2 2 1	5 5 2	1 1 14
11					1	1	5 3 2	1 1 28
10						2 3	4 1 1	1 7 6
9							1 1 1	1 1 1
8								
7								
6								
(5)	4.25							
(10)	4.75							
(11)	5.25							
(20)	5.75							
(32)	6.25							
(46)	6.75							
(70)	7.25							
(70)	7.75							
(73)	8.25							
(86)	8.75							
(87)	9.25							
(73)	9.75							
(61)	10.25							
(68)	10.75							
(70)	11.25							
(36)	11.75							
(94)	12.25							
(68)	12.75							
(144)	13.50							
(71)	14.50							
(39)	15.50							
(15)	16.50							
(4)	18.00							
(100)	Adult							

Ordinate: Time in seconds.

Abscissa: Age, middle value of.

F: No. of failures per age (excluded).

In parentheses: No. per age in distribution.

TABLE III.—TIME VALUES AND NUMBER OF CASES OF DIFFERENT AGES—BOYS.

Age	Number of Cases	Mean	Standard Deviation	Minimum	Lowest Quintile	Lower Quintile	Median	Upper Quintile	Highest Quintile	Maximum
6.25	49	31.4	8.29	20	26	28	30.0	32	37	58
6.75	60	31.2	8.47	17	23	28	29.7	31	39	55
7.25	75	27.5	5.41	20	23	25	26.0	28	32	45
7.75	73	24.9	6.43	15	19	22	23.3	25	31	46
8.25	72	24.5	5.01	15	20	22	24.2	25	28	37
8.75	72	22.3	4.91	13	18	21	22.1	23	27	36
9.25	71	20.9	4.70	13	17	19	20.6	22	23	37
9.75	88	19.5	4.50	12	16	18	19.0	20	22	32
10.25	62	19.4	4.28	11	16	17	18.8	20	23	30
10.75	65	18.0	4.57	10	15	16	17.3	18	21	38
11.25	72	17.7	3.47	11	14	17	17.4	18	21	26
11.75	62	17.1	3.30	12	14	16	16.6	17	20	27
12.25	85	16.1	3.56	10	13	15	15.7	16	19	30
12.75	95	15.9	3.64	9	13	15	15.4	17	19	26
13.50	137	15.2	3.23	8	12	14	15.0	16	18	23
14.50	101	14.5	3.00	8	12	13	14.2	15	17	23
15.50	46	14.6	3.05	9	13	13	14.5	15	16	27
Adult	121	11.8	2.96	7	9	10	11.1	15	16	23

TABLE IV.—TIME VALUES AND NUMBER OF CASES OF DIFFERENT AGES—GIRLS.

Age	Number of Cases	Mean	Standard Deviation	Minimum	Lowest Quintile	Lower Quintile	Median	Upper Quintile	Highest Quintile	Maximum
6.25	52	34.8	11.21	22	26	29	31.4	33	40	76
6.75	46	32.0	10.43	20	25	27	29.3	30	37	86
7.25	70	28.1	7.41	18	22	25	27.3	29	31	56
7.75	70	26.8	6.13	17	22	24	25.6	26	31	51
8.25	73	23.5	4.94	12	19	22	22.5	24	28	42
8.75	68	22.0	5.21	13	18	20	21.4	23	26	38
9.25	67	21.5	5.48	12	18	19	20.8	21	24	40
9.75	73	20.9	4.75	14	16	18	20.0	21	23	54
10.25	61	18.3	3.39	12	15	17	18.1	19	21	25
10.75	68	19.4	4.36	11	16	18	18.5	19	21	37
11.25	70	17.8	3.68	12	14	16	17.4	18	21	27
11.75	86	19.0	5.04	10	15	17	18.1	19	23	31
12.25	94	17.0	3.76	10	14	16	17.0	18	20	29
12.75	68	17.2	3.53	9	14	16	17.3	18	20	29
13.50	144	16.6	3.61	9	14	15	16.5	17	19	30
14.50	71	16.0	3.53	8	13	15	15.8	16	20	24
15.50	29	14.9	3.37	7	13	14	14.7	15	17	23
Adult	100	12.3	2.72	6	10	11	12.1	13	14	22

method of giving the test permits the expression of greater individuality on the part of the subject. It is less mechanical and allows him more freedom in the employment of his own resources. In the second place, the scope of the investigation is larger and includes a relatively wider range of individuals, being made up of children from both the better and the poorer districts of the city. Had the investigation been confined to either of these districts alone, a distinctly different distribution of records would have resulted. The standard deviations would then be considerably smaller than they are under the present distribution. The central values of the records from the better districts of the city are distinctly below those from the poorer sections. The maximum record for each age group was made in 87 per cent of the groups of girls and 83 per cent of the groups of boys, by children from the poorer sections of the city; while the minimum record for each age group was made in 87 per cent of the groups of girls and 70 per cent of the groups of boys, by children from the better sections of the city. This is not an attempt to contrast the better sections of the city with the poorer sections, but a practical demonstration of the pitfalls, and the impossibility of establishing reliable norms by testing only a couple of thousand children. It is absurd to label as a standardization the results obtained by testing only several hundred children.

Tables III and IV contain the computed results of the distributions of the time records for the ages in which the number of cases tested is sufficient to warrant a reasonable confidence in their reliability. Table III contains the records of the boys, and table IV those of the girls. In both tables the first column indicates the ages, the second the number of cases for each age group, and the remaining columns represent time values in seconds as calculated from the records for each age. The third column contains the mean time and the fourth the standard deviations. The fifth contains the lowest, *i. e.* shortest, or minimum record for each age; the sixth column, the lowest quintile, or the value of that record below which 20 per cent of the cases are distributed; the seventh column, the lower quintile, or that value below which 40 per cent of the cases are distributed; the eighth column, the median, or that value above and below which 50 per cent of the cases are distributed; the ninth column, the upper quintile, or that value above which 40 per cent of the cases are distributed; the tenth column, the highest quintile, or that value above which 20 per cent of the cases are distributed; the eleventh column, the maximum or longest record made by any individual of the group.

The central values, as indicated by the relatively large standard

CHART I.—BOYS.

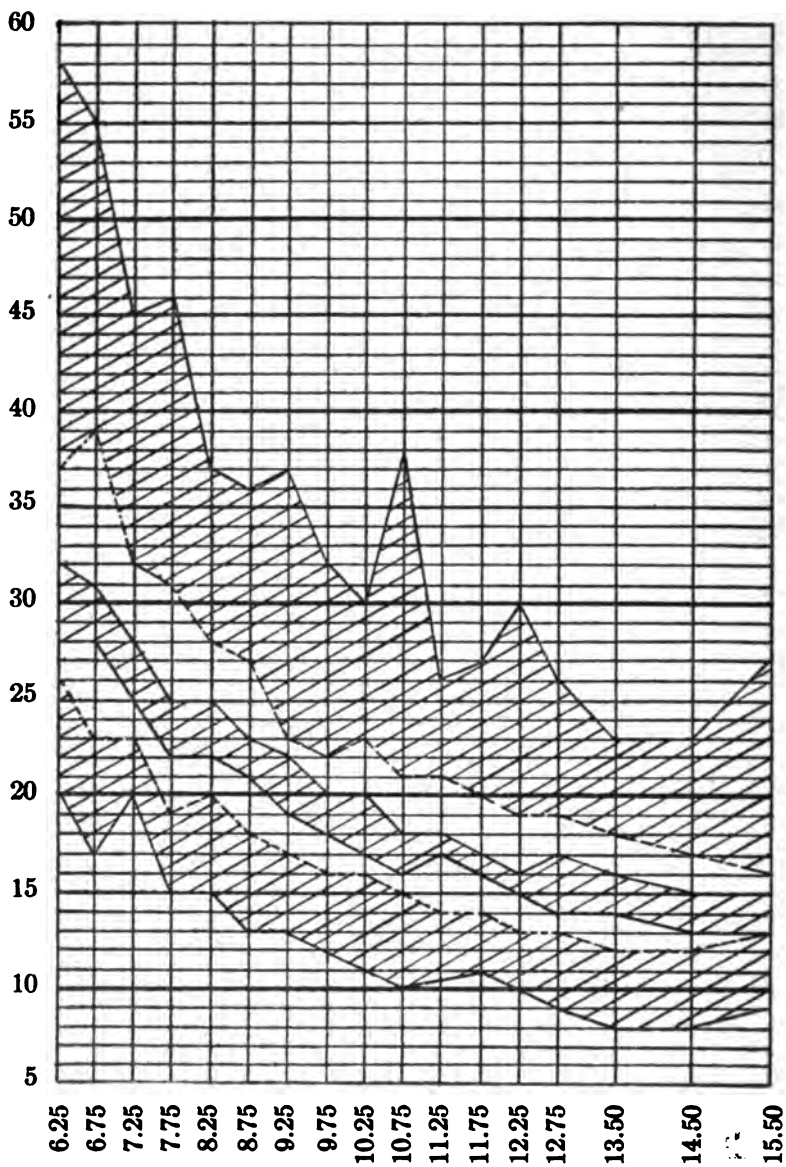
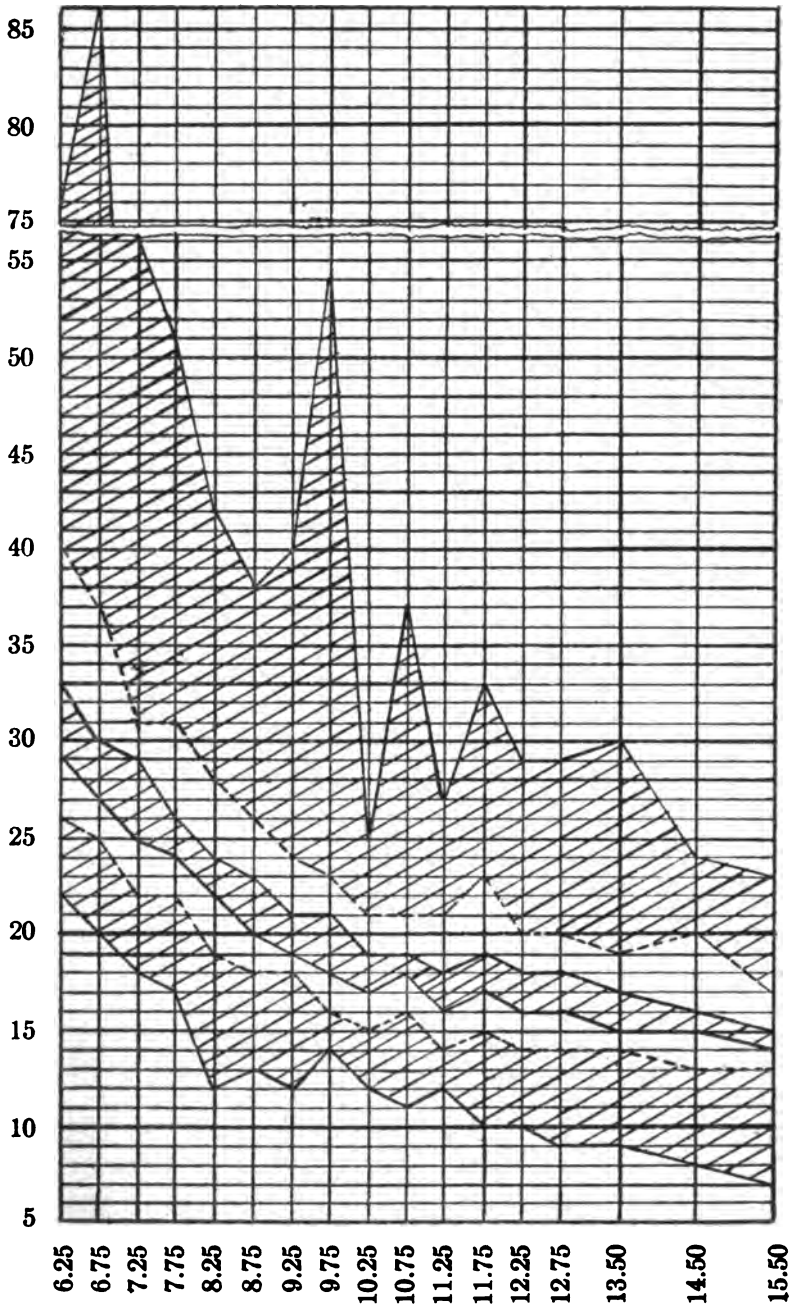


CHART II.—GIRLS.



deviations, especially for the lower ages, are only approximately reliable and are not presented as absolute and final norms. By this we mean, that these values do not determine the standard of normality so accurately that a child in order to be considered normal must perform the test in exactly mean or median time; or stated inversely, that a child who performs the test in a given length of time has the mentality of that age for which his time happens to be the mean or median value. In contradistinction to what certain published reports would have us believe, it must be remembered that neither normality nor mentality, whatever they are, can be represented by a point, or rated by reference to any absolute standard.

A graphic representation of the distribution of the time records of the children in tables III and IV is given in charts I and II. On the abscissa are the ages, and on the ordinate, the time in seconds. The lowest shaded portion is bounded by the minimum and lowest quintile. It contains the time records of the lowest 20 per cent of all records. The middle shaded portion, bounded by the lower and upper quintiles, is known as the middle quintile and contains the middle 20 per cent of the records, 40 per cent lying above and 40 per cent below. The uppermost shaded portion, bounded by the highest quintile and the maximum for each age, contains the highest 20 per cent of all records. The unshaded portions bounding the middle quintile each contain 20 per cent of the records.

Reference to these tables and charts shows (1) that formboard ability increases at least to the age of fifteen; (2) that half-yearly norms are not only possible, but necessary, up at least to the age of thirteen, if a standardization is to have practical value; and (3) that boys are on the average superior to girls in the test. The actual value and extent of the differences here enumerated and established can be determined only by continued application of the test to many more hundreds of children. Until such an extension is made these tables and charts will have to serve as the basis of comparison for records obtained with the use of the same board by the same method.

The most expeditious way of using the charts to compare a given record, is to refer the record first to its proper sex and age group. Its relative position within this group should then be determined by locating it with reference to the quintile within which it falls.

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CORRELATION OF THE WITMER FORMBOARD AND CYLINDER TEST.

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In the spring of 1915, the cylinder test was given by two advanced graduate students in psychology to 47 men and 28 women undergraduates in Psychology 2c at the University of Pennsylvania. The following fall, this same test as well as the Witmer formboard was given by advanced students in psychology to 55 men and 59 women undergraduates in Psychology 1c. These tests were employed to give the students an insight into mental testing, and to begin the accumulation of data with the view of establishing norms for adults. As such tests come in the group generally known as mechanical or manual tests it has seemed advisable to treat them together.

The cylinder test consists of eighteen wooden cylinders of graduated depth and diameter, modelled after the larger Montessori insets with duplications omitted, and fitted into eighteen cylindrical recesses set in a circular wooden frame. The experimenter removed the cylinders in the presence of the subject by beginning with the smaller blocks and lastly placing the larger blocks on the top of the pile in the inner space of the cylinder board. The subject was then told to replace the blocks as quickly as possible. The time was taken to fifths of a second by means of a stop watch from the moment the subject touched the first block until the last one was correctly replaced. Each subject was given three trials by the same method in as rapid succession as possible. The shortest trial time is taken as the index of the subject's cylinder ability.

TABLE I. NUMBER OF CASES AND TIME VALUES IN SECONDS—CYLINDER TEST.

	Men			Women		
	2c	1c	Combined	2c	1c	Combined
Number of subjects.....	47	55	102	28	59	87
Mean.....	32.1	34.9	33.6	35.5	35.0	35.2
Standard deviation.....	5.86	7.67	7.21	6.39	7.89	7.34
Minimum.....	17.8	22.0	17.8	18.4	21.0	18.4
Lower quartile.....	29.0	29.0	29.0	33.2	29.0	30.0
Median.....	31.4	34.0	33.0	36.6	33.0	34.0
Upper quartile.....	36.0	39.0	38.0	39.2	41.0	38.0
Maximum.....	54.0	60.0	60.0	47.4	57.0	57.0

Table I contains the results of the cylinder test for both classes. The first column of figures contains the time values for the men in Psychology 2c; the second, for the men in Psychology 1c; the third the combined results for the men of both classes; the fourth, the time values for the women in Psychology 2c; the fifth, for the women in Psychology 1c; and the sixth or last, the combined results for the women of both classes. In explanation of the meaning of the time values given in the table, it may be stated that the mean is the average time for the group; the standard deviation indicates variability and the reliability of the mean; the minimum is the shortest time record of the group; the lower quartile is that record below which twenty-five per cent of the cases fall; the median is that record above and below which fifty per cent of the cases occur; the upper quartile is that record above which the highest twenty-five per cent of the cases occur; and the maximum is the highest or longest time record of the group.

Reference to table I shows that there is a close agreement between the results for the two classes, and that the standard deviations are fairly constant. It would thus appear that the record for either of these groups is fairly representative of what could be expected of all similar groups. On the whole there is a tendency for the men to be superior to the women on this test.

The students of Psychology 1c were tested on the Witmer formboard by the standard method described by Mr. Young in the present issue of *THE PSYCHOLOGICAL CLINIC*. Each student was given three trials according to the standard method, and the shortest trial was taken as the index of his formboard ability. Immediately after these three regular trials were completed, the subject was given a fourth trial in which he was required to keep his eyes closed during the time the blocks were being removed by the experimenter, and

TABLE II. NUMBER OF CASES AND TIME VALUES IN SECONDS—FORMBOARD.

	Men		Women	
	Standard Method	Eyes Closed	Standard Method	Eyes Closed
Number of subjects.....	55	55	59	59
Mean.....	11.8	156.0	12.6	152.0
Standard deviation.....	2.72	83.94	2.81	97.62
Minimum.....	7.4	49.0	6.0	49.0
Lower quartile.....	9.8	90.0	10.8	80.0
Median.....	11.2	134.0	12.0	119.0
Upper quartile.....	14.0	184.0	14.6	185.0
Maximum.....	20.0	447.0	20.4	499.0

while he himself replaced them. The time was taken in seconds by means of a stop watch from the moment the subject touched the first block until the last one was correctly replaced.

Table II includes the results of the undergraduate students in Psychology 1c on the Witmer formboard. The first column of figures contains the time values for the men tested by the standard method; the second column, for the men tested with the eyes closed; the third column, for the women tested by the standard method; and the fourth or last column, for the women tested with the eyes closed. The time values in table II have the same significance for their respective groups as those in table I. By the standard method the men are slightly superior to the women in formboard ability, but with the eyes closed the reverse is true.

The standard deviation is relatively much larger where the formboard is worked with the eyes closed than where it is worked by the standard method. The large standard deviation in the former case is apparently due to the fact that in a few cases an unusually long time was required to complete the test. Such a distribution is to be expected, for while there is a minimum time below which the test cannot be worked, there is not such an upper limit. For the men the difference between the median and maximum is 3.7 times that between the median and minimum, while for the women the difference between the median and maximum is 5.4 times that between the median and the minimum.

The formboard worked by the standard method gives results which lie within a narrower range of distribution than the results for the cylinder test, while the formboard worked with the eyes closed gives a much wider range of distribution than either of the above mentioned tests. The minimum record for the cylinder test is several seconds below the maximum record for the formboard worked by the standard method, while the maximum record of the cylinder test is only several seconds above the minimum record of the formboard worked with the eyes closed. From this it is readily seen that most of the time records of the cylinder test lie between the maximum formboard record obtained by the standard method and the minimum formboard records obtained with the eyes closed. Just what the significance of these differences is has not been determined, but it is certain that they indicate the varying difficulties of the tests. These three tests represent a series of progressive difficulties; the formboard worked by the standard method is a simple test, the cylinder test is a stage higher in difficulty, while the formboard worked with the eyes closed makes a very difficult test, because the individual is facing a new problem and feels himself in a strange environment.

Since three trials were used in working these tests, it would naturally be expected that the majority of the best records would occur on the third trial, for here practice would tend to shorten the time. The percentage of cases where the best records occurred on the first, second, and third trials respectively, was determined.

TABLE III. DISTRIBUTION OF SHORTEST TRIAL TIME RECORDS.

Trial.....	MEN			WOMEN		
	1	2	3	1	2	3
Formboard.....	2%	11%	87%	14%	10%	76%
Cylinders.....	7%	34%	59%	7%	33%	60%

Table III shows these percentages for both the men and the women in working the cylinder test and the formboard by the standard method. Thus 11 per cent of the men made their best record on the second trial of the formboard, and 34 per cent made their best record on the second trial of the cylinder test.

Since it is the general assumption that the different mechanical or manual tests, such as these, test the same factors or qualities in an individual, it would be only natural to expect that success on the one would mean success on the other. In reading over the present literature we find the formboard listed as a test of powers of recognition, discrimination, memory, muscular co-ordination, and trainability by some clinicians, while others consider it a test of form perception, rate of movement, and ability to meet a new situation, and still others use it as a test of constructive capacity, intellectual ability, or so-called general intelligence. From casual observation, although the cylinder test is more difficult, it would appear to test the same factors. Such tests as the formboard are generally considered simple and are supposed to involve only a few of the simpler mental processes. On this account they are generally referred to as mechanical or manual tests. If these tests were simple and involved the same factors they should show a high correlation. To determine the facts of the case, a correlation was worked out between the results obtained from each test.

From the class in Psychology 1c in the fall of 1915, 55 undergraduate men and 59 undergraduate women took the formboard test by the standard method and with the eyes closed during one recitation. The following recitation the same students took the cylinder test. These tests were not given as group tests. Each individual was tested by himself so that no student saw any other work the tests. The results are presented in the preceding tables

and are here correlated by Pearson's product moment method of correlation. Table IV gives these correlations.

TABLE IV. CORRELATION.

Correlation between:	Men	Women
Cylinders and Formboard by the Standard Method.....	+0.466	+0.067
“ “ “ with the eyes closed.....	+0.570	+0.186
Formboard; Standard Method and eyes closed	-0.008	+0.415

These correlations are scarcely what one would have expected from such apparently closely allied tests. In no instance is there a high correlation. Just as interesting as the lack of a high correlation, is the fact that there is no agreement in correlation between the sexes. A significant correlation between two tests for the one sex does not accompany an equally significant correlation between the same tests for the other sex. Thus the cylinder test and the formboard by the standard method which give the positive medium correlation of 0.466 for the men, have the very low positive correlation of 0.067 for the women. Then the formboard by the standard method and the eyes closed, which gives the insignificant negative correlation of 0.008 for the men, has the positive medium correlation of 0.415 for the women.

Assuming that the number of cases presented is sufficient to give fairly reliable results, what are we to conclude about the above tests? It does not appear that they are as simple as is generally assumed, and furthermore it does not appear that they test the same mental factors. The formboard worked with the eyes open and with the eyes closed gives two distinctly different sets of results for the men, while for the women it seems to set more nearly the same problem. The reverse is true for the cylinder test and the formboard by the standard method. They appear to set somewhat the same problem for the men, but different problems for the women. There appears to be sufficient evidence to conclude that each of these tests sets a different problem for each of the two sexes, and tests different factors in each. If this is true, success on the formboard by the standard method means one thing for a man and a very different thing for a woman. This may help to explain why different investigators use the same test in approximately the same manner to test very different factors. They consider the test to be simpler than it really is, and thereby stress one phase to the neglect of others of probably equal importance. The sex differences here demonstrated deserve further investigation and indicate the need of further analysis of performances and of more careful interpretations.

REVIEWS AND CRITICISM.

Completion-Test Language Scales. By Marion Rex Trabue, Ph.D. Teachers College, Columbia University Contributions to Education, No. 77, 1916. Pp. IX + 118.

In this monograph Mr. Trabue reports an attempt to derive one or more scales for the measuring of ability related to language. He does not define "language" in any strict sense, as he believes that on the whole ability to complete his sentences successfully is very closely related to what is usually called "language ability".

Mr. Trabue finds that his scales of mutilated sentences have an advantage over mutilated paragraphs in that they may be used a second time to reveal improvement. The story of a paragraph is not readily forgotten, and therefore improvement on a second trial need not necessarily denote an improvement in ability. But the sentences deal with a wide variety of subjects, none of which is interesting in itself and consequently they are not readily retained in memory. Using the same scale twice is rarely necessary, however, as the author of the sentences has prepared several other scales (B, C, D, E) which for all practical purposes are equal and interchangeable. Likewise scales I and K are fairly well matched, and L and M differ but slightly in their degree of difficulty.

The sentences possess an added advantage over the mutilated paragraph in that they are arranged as steps on a scale with approximately equal intervals between the steps. Thus an individual is not discouraged at having a task set for him which is too hard, nor is he disgusted at being asked to do child's play. Furthermore it is easier to judge whether a sentence is "right," "almost right," or "wrong" than it is to score a paragraph. The comparison of two performances on scales of equal difficulty is a more valid indication of an individual's ability than his performance on a passage of prose.

The same amount of time is allowed to all pupils. Each pupil is scored two credits for every sentence perfectly completed, and one credit for every sentence almost perfectly completed. This automatically takes account of the time spent on the work, the quality of work done, and the difficulty of the tests one is capable of doing.

From a preliminary list of fifty-six sentences, which he calls the "graded series" Mr. Trabue has derived his Scales A, B, C, D, E, I, K, L, and M. In Scale A the two sentences for each grade are the ones which proved to be just difficult enough to be done by 50 per cent of the children in that grade. The relative distance between grades is calculated on the P. E. or the median deviation from the median of a grade distribution. Scales B and C are chosen entirely from the evaluated sentences of the graded series and consist of ten sentences each, the steps being about 1 P. E. above each other. Scale C is, on the whole, about 4 P. E. more difficult than Scale B. Seven minutes are allowed on each of these scales, and very careful directions are given in order to make sure that the child understands the requirements. Scales D and E are practically of the same difficulty as B and C, but each contains four sentences which do not appear

in the graded series. Scales I and K are intended for adults and only five minutes are allowed for their completion. The procedure is the same as for the other scales.

Mr. Trabue's report contains results from over six thousand children, primarily from New York and New Jersey, although records were obtained from classes in Illinois, Indiana, Michigan, Missouri, and Pennsylvania. The results indicate no great difference in the abilities of children in the same grades in different states. The results from Scale A show that each successive grade makes a higher score than the grade just previous, and that the range of the middle 50 per cent likewise moves steadily upward. This is naturally to be expected, although the relative amounts of progress between grades are unusual and need careful examination. Boys seem to make a somewhat lower median score than the girls in the same grade although the difference is small and the amount of overlapping enormous. There is also a distinct tendency for the older pupils in the grade to make lower scores than the younger pupils. Mr. Trabue suggests that the reason for this is that teachers are possibly inclined to promote dull pupils on age and retard bright pupils because of their youth. To say that a child is twelve years old apparently signifies far less concerning his ability to complete sentences than to say he is in the sixth grade.

Mr. Trabue feels that a systematic study should be made, correlating his language scales with other tests of knowledge and ability. Because he believes his sentences are more accurate than mutilated paragraphs, he thinks that correlations with them will be higher than with the prose passages. No such study has as yet been published. Such correlations as have been made "have been worked out incidentally, sometimes as a matter of curiosity and sometimes in connection with other studies." They are reported by Mr. Trabue in an appendix.

NATALIE A. BASSETT.

NEWS AND COMMENT.

Symposium on Speech, Voice, and Hygiene of the Vocal Tract.

A comprehensive symposium on the improvement of speech and the hygiene of the voice, in the April number of the *Journal of Ophthalmology, Otology and Laryngology* is one of the fruits of a campaign for the improvement of the voice and speech of Americans inaugurated by the committee on American speech, whose organization was authorized in 1915 by the National Council of Teachers of English. This committee consists of a large number of volunteers from all walks of life. The plan of the symposium was worked out by a physician (Dr. Burton Haseltine), and a professor of English (Dr. John M. Clapp). Prof. Clapp calls attention to the fact that "the standard of speech among Americans is the worst in the civilized world," "American voices are strident and harsh," largely as the "result of careless habits," while "our vicious speech habits are a serious handicap to national efficiency." The catholicity of the symposium is indicated by the professions represented among the contributors, and the nature of the topics discussed:—deformities, diseases, and imperfections of the

vocal organs which injuriously affect speech, and the required treatment (three papers); speech defects of childhood, the relation of speech efficiency to business needs, particularly to the telephone service (four papers), to social demands and to the demands of the stage; the school's function in speech improvement, and the need of a "scientific system of voice measurement, voice production and voice training." Five of the contributors are physicians (George B. Rice, Joseph C. Beck, Smiley Blanton, LeRoy Thompson, Burton Haseltine), one is a dentist (Frederick Bogue Noyes); five represent the profession of teaching (John M. Clapp, Shirley M. K. Gandell, Fred Newton Scott, James E. McDade and William Bachrach) and one the stage (Otis Skinner); one is connected with a telephone company (John W. Bradshaw) and one with a department store (W. B. Towseley). The symposium marks the present-day tendency toward cooperative attack on problems of national concern. Language is the chief carrier of thought, and speech is the most effective vehicle of expression. Too much emphasis cannot be given to the desirability of developing uniform standards of American speech.

J. E. W. WALLIN.

Sanitary School Surveys.

An experiment has been completed by the Bureau of Welfare of School Children, New York Association for Improving the Condition of the Poor, with the purpose of working out a system of school surveys. The object is to ascertain "the sanitary conditions in a group of typical schools in New York City." When the facts are in hand, the Bureau plans "to bring to the attention of the proper authorities such defects as can be remedied, but which might be overlooked through inadequate administrative provision for this kind of work, due to insufficient allowance of public funds for this purpose," and at the same time "to evolve a standard score card for urban school surveys; this score card to represent the result of the practical application of all known standard tests for school hygiene and sanitation."

The report of the preliminary survey was contributed by Mr. J. H. Berkowitz, special investigator for the Bureau, to the March number of *The Modern Hospital*. "The Bureau, in cooperation with the Bureau of Educational Hygiene of the Department of Education, made a survey of a large public school, with an enrolment of over 1900 pupils, in one of the more congested sections of the city, which is typical of a large number of school buildings in New York. The survey disclosed some interesting facts, among which might be mentioned the following:

"1. Conflict in authority between principal and janitor because the latter is not, as he should be, the subordinate of and responsible to the principal directly.

"2. Inadequate care of the school plant, due to negligence of the janitor and his helpers in the matters of hygiene and sanitation.

"3. Reckless exposure of children to elements injurious to physical well-being through the indifference and perhaps negligence, or even ignorance, on the part of some teachers as to the elements of school hygiene.

"4. The remarkably rapid change in standards of school architecture and sanitation, as was indicated by the structural shortcomings in a building little more than a decade old.

"5. Commendable efforts made by the school authorities to improve conditions, notably by the installation of sanitary equipment and otherwise to bring the old provisions as nearly as possible up to present-day requirements."

As a result of the preliminary survey, "enough has been accomplished and data of a sufficiently suggestive character have been secured to justify the Bureau of Welfare of School Children, in cooperation with the Department of Education, to proceed with the plan of extensive school surveys."

Reduction of Infant Mortality.

"There is hardly a community in the whole country which can be said to be more than half-way trying to prevent the waste of infant life."

"No community with an infant mortality rate of over fifty can claim that its babies are getting anything like a square deal." These are the statements made by the New York Milk Committee as a result of a survey of the work done and results accomplished during the past ten years in a large number of cities throughout the U. S.

In a bulletin which the Committee has just issued and addressed to mayors, health officers, editors, citizens and taxpayers, are given the statistical results of the investigation. The Committee's questionnaire was sent to the health officers of 252 cities. Infant mortality statistics were obtained from 144 of these. From the remaining 108 either no reliable data could be obtained or the health officials were unwilling to supply the information which the Committee requested. Out of the 144 cities furnishing information; 46 were cities of 100,000 or more population, 32 were cities of 50,000 to 100,000 population and 66 were cities of 15,000 to 50,000 population, according to the last U. S. census.

Of the cities with a population of 100,000 or more a baby born in Omaha, Neb., was found to have four times as good a chance to live to celebrate its first anniversary of its birth as a baby born in Nashville, Tenn., or Fall River, Mass. In cities under 100,000 and over 50,000 population, a Salt Lake City baby has over three times the chance of surviving the first year of life as a Passaic, N. J., or Holyoke, Mass., baby has, while in cities between 25,000 and 50,000 population a La Crosse, Wis., baby has an advantage of more than six to one over a Montgomery, Ala., or Perth Amboy, N. J., baby.

Mr. Taylor, Director of the New York Milk Committee, maintains that it is the community rather than the individual that has power to reflect the ultimate credit on itself and its individuals in baby saving as in everything else. He holds that no community can excuse a high infant death rate on the ground that conditions are unfavorable. We know that conditions which endanger the health and lives of babies can be corrected if only the known preventive measures are applied. It will, of course, cost more to safeguard babies in some communities than in others, but is not baby saving a duty and the real basis of future city, state, and national preparedness?

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THE SIGNIFICANCE OF THE BINET-SIMON TESTS.

BY EDWARD L. THORNDIKE, PH. D.,
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In a study of the intellectual status of the dependent children of a certain county, made by Mr. Stenquist, Mr. Trabue, and the author, four series of tests were used—the Binet-Simon series as arranged by Goddard, a series of 56 sentences with omitted words to be filled, a series of passages to be read with questions to measure the comprehension gained by the reading, and a series of mechanisms to be put together out of their loose parts, the mechanisms themselves being at hand for examination.* Each child was first given as a measure in each test the age of the median ordinary child attaining the score which the dependent child in question attained. Then, as his final measures, the four differences (plus or minus) of these ages from the dependent child's actual chronological age were used.

It is of some theoretical interest, and of great practical importance, to measure the correlations between these four measures of superiority or inferiority to the median ordinary child of the same chronological age. I have therefore computed the Pearson coefficients of correlation with the following results:

THE INTERRELATIONS OF THE THREE TESTS OF INTELLECT INVOLVING ABILITY WITH WORDS, NUMBERS, AND THE LIKE.

	Binet with Completion Test.	Binet with Reading Test.	Completion with Reading Test.
29 10-year olds.....	.86½	.78	.74
31 11-year olds.....	.80½	.70	.82
35 12-year olds.....	.89	.84	.90
35 13-year olds.....	.94	.90½	.92
23 14-year olds.....	.87	.82	.92
	—	—	—
Average of the 5 r's.....	.87½	.81	.86

* Details concerning the tests may be found in "The Intellectual Status of Children Who are Public Charges," *Archives of Psychology*, No. 33, Sept., 1915.

It is clear that these three series measure much the same complex of abilities and achievements. If the Binet tests measure general intellect, so to a high degree must the tests in merely reading a passage with understanding. The Binet tests are almost as much like intelligent reading in what they measure as the completion tests, dealing exclusively with words, are. If the Binet tests are really adequate to measure that mixture of ability to deal with words and with facts expressed in words and other symbols, ability to deal with things of all sorts and ability to deal with people, whereby a person lives successfully, then the very much more convenient Completion and Reading tests are also approximately accurate measures of that mixture and should be used widely in mental diagnosis. If, on the other hand, as I think, the Binet test measures chiefly the ability to deal with ideas expressed in words, and is inadequate as a measure of mechanical ability or executive ability, the fate of children should not be decided so exclusively by it, as is now the case.

This latter hypothesis is supported by the correlations in the case of the test of mechanical ability, or construction test. If the Binet tests measure general ability adequately they should correlate closely with the construction test—as closely, say, as they do with the reading test (except for a possibly greater “attenuation” due to a greater unreliability in the construction test than in the reading test). They do not. On the contrary, they show no superiority in this respect to the completion test and very little superiority to the reading test. The correlations found (Pearson coefficients) are as follows:

RELATIONS OF THE BINET, COMPLETION AND READING SCORES TO THE CONSTRUCTION TEST SCORES.

	Binet with Construction.	Completion with Construction.	Reading with Construction.	Composite of Binet, Completion and Reading with Construction.
28 10-year olds. ....	.68	.68	.55½	.66
11-year olds. ....	.74½	.70	.70	.76
12-year olds. ....	.55½	.62	.40½	.59
13-year olds. ....	.56½	.51½	.45½	.55½
24 14-year olds. ....	.60½	.73½	.75½	.75
Average of 5 r's ..	.63	.65	.57½	.66

Clearly the Binet test is not an adequate test of intellect in general for even very stupid children of ages 10-14. It tests much the

same ability or complex of abilities as the completion and reading tests. This ability or complex of abilities is far from identical with the ability measured by the construction test, for example.

It should be noted that, although it is fair to use the relative amounts of these correlations for the purposes of the argument of this paper, their absolute amounts should not be assumed to hold good for a group formed by random sampling. These dependent children are inferior to average children of equal chronological age in the construction test, and are very much inferior to average children in the other three tests. Their deviations being taken from the average child of the age in question, we have a selection largely of minus deviations, and it is not certain that the correlation calculated from such a selection will represent fairly the correlation calculated from a random sampling of all.

	Binet	Compl.	Read	Const.
Binet		.87	.81	.63
Compl.	.87		.86	.65
Read	.81	.86		.57
Const.	.63	.65	.57	
Composite				.66

A SURVEY OF MEDICAL INSPECTION IN THE CITY SCHOOLS OF CALIFORNIA.

BY EMILY OOTHAUT LAMB,
Stanford University, Cal.

In a recent survey of the amount and kind of medical inspection in the public schools of twenty-nine of the larger cities and towns of California, the conditions shown were far from being ideal, yet demonstrate the fact that the superintendents and school boards are considering the matter seriously and that many of them are doing important work.

The cities considered by this survey run from 416,912 to 5,021 in population (Census of 1910).

The following is the list of questions of the survey:

1. *Have you medical inspection in your schools?*
2. *Is the work done under the Board of Education or the Board of Health?*
3. *Is the inspection done by a doctor? If more than one, number?*
4. *How much time does he give to the work?*
5. *What is his salary?*
6. *For what does he (or she) examine? (underline) Eye defects, ear defects, throat disorders, adenoids, enlarged tonsils, spinal curvature, malnutrition, nervous disorders, tuberculosis, contagious or infectious diseases.*
7. *Does each child have hearing tested annually? Vision?*
8. *Have you a medical clinic?*
9. *Do you employ school nurses? Number?*
10. *How much time does she (or they) give to the work?*
11. *What are her duties? What is her salary?*
12. *Have you a dental clinic?*
13. *How much time does the dentist give to the work?*
14. *What is his salary? Does any dentist give his time free?*
15. *After medical inspection, have you a "follow up" system?*
16. *Do the grade teachers do any examining of the children?*
17. *What is the character of their examinations?*
18. *Have you open-air schools? How many children are in the open-air schools?*
19. *Has each school a play-ground? How large is each?*
20. *Is a play-ground director employed? What is her salary?*
21. *Have you a physical director in the High School?*
22. *Do you use individual towels?*
23. *Have you drinking fountains?*
24. *Have you oiled floors? How often oiled?*

Of the twenty-nine cities in the survey, sixteen have medical inspection and fifteen cities employ a doctor for this work; several cities employ more than one. Los Angeles has nine, four for full time and five for a half day. In the fifteen cities, twenty-one doctors are employed, at salaries ranging from \$1200 to \$2250.

In all but two cities the Board of Education has charge of this inspection work; in the other two it is under the Board of Health. In nine cities the inspection is for the following defects: eye defects, ear defects, throat disorders, adenoids, enlarged tonsils, spinal curvature, malnutrition, nervous disorders, tuberculosis, contagious and infectious diseases. In the other cities the inspection is not quite so extensive. In twelve cities the vision of all children is tested annually, and in nine, the hearing.

Five of the cities have a medical clinic. This is all important; the examination may be most carefully made, but if the parents are either too negligent or too poor to have anything done about their children's defects, it is of little use to examine unless there is a clinic to take care of such cases.

In the cities not employing a doctor, seven employ a school nurse. In twenty-nine cities, sixteen employ one or more nurses, and the total number of nurses thus employed is forty-six. San Francisco has fourteen of these. In several places, the district nurses or the visiting nurses look after the school nursing. The school nurse is almost more necessary than the school doctor. She can get at the home better; can talk with, and persuade the mother to do something for the ailing child; can advise about diet, clothing, and home sanitation. Where a school doctor is employed, she can do the follow-up work and see that the doctor's recommendations are carried out. The nurses' salaries range from \$540 to \$1104 a year.

The greatest deficiency in the system is in the matter of dental inspection and dental clinics. Only eleven cities regularly employ a dentist and of these only four dentists give full time to the work. In nine of the cities, dentists give their time free of charge, which is commendable but rather unsatisfactory in the long run.

Only five of the cities have open-air schools. Yet in California there is little need for the expensive, pretentious school buildings; the weather conditions are such that a building of wood construction, of a very inexpensive type, is adequate and better in every respect. One of the advantages of such a type of building is the fact that it can be torn down after it has served its usefulness and be replaced by a new one embodying the most modern ideas of lighting and ventilation. When structures are erected which cost a half million dollars or perhaps a million dollars, then we are in duty bound to use them

for many years whether they are suitable or not. The open-air school, together with the school lunch, might do much toward solving the problem of the ill health of the school children of California, and toward counteracting the effects of the closed up home.

In a recent canvass made among the school children of one of the larger cities of Southern California, it was found that forty per cent of the children were in the habit of sleeping in rooms with more than one person and with the windows all closed at night: this was not in the poorer homes either. Easterners come to the California coast cities from the over-heated eastern homes and feel that the California houses are very cold; the nights are cold to them, they had expected summer heat the year round. The result is the closing up of houses at night.

Medical inspection is especially necessary in the California schools because of the problem of many families migrating to the Pacific coast every year who are physically unable to endure the rigors of the eastern winter. Many of these families come here because one or more of the members have tuberculosis or some other serious disease. Many families also come to California because of the poor health condition of the children, who may be anemic or tubercular.

The strongest argument for the open-air school is to watch a school being emptied at noon, in one of the well-to-do sections of almost any of our coast cities: there will be pale, thin, anemic looking children in the ranks; children who have plenty of food but perhaps not of the right kind; or who lack the power to assimilate it. This is truer of the southern part of the state than the northern part. Are we sufficiently guarding against this danger? Shall we allow tuberculosis to take a firm hold upon our population, when a small sum *per capita*, spent upon our school children, would almost eliminate such conditions altogether? Can we afford to take care of these people in our county hospitals, which for the most part are a disgrace to us, or would it be better to do preventive work in our public schools? It is only through the public schools that much can be done to alleviate this condition, and some few cities recognize that fact and are doing all in their power to deal with the situation intelligently and to remedy the faults of the home. In the poorer sections of our cities we have the Mexican element to consider, with their disregard of regular feeding and oftentimes their lack of food; their insanitary home conditions, where many sleep in the same hermetically closed room; and where bathing is little indulged in. Or we may have cities, such as San Francisco and Los Angeles, with a large foreign population to be dealt with; each nationality living in

groups and as much in the manner of the life of their native lands as possible, universally with little air and in some cases the most inappropriate food.

On the whole, the showing for these larger cities seems fairly good, but the record should be clearer. Our normal schools should have very thorough courses in Child Hygiene and in School Hygiene, so enthusiastically given that every prospective teacher would be ready to go out to fight for better sanitary conditions and for the physical welfare of the children under her care. Such a course would make the teacher better able to deal with the problem intelligently, from the standpoint of knowledge, no matter how small her school might be nor how isolated in the country. Our city school boards should be convinced of the necessity of medical inspection; that it is an economy not an extravagance. It is poor economy to hire experts to teach children who are not in physical condition to receive such instruction.

REPRODUCTION OF PROSE PASSAGES.¹

BY RUPERT CLENDON LODGE,

University of Minnesota,

and

JOSEPH LEONARD JACKSON,

University of Alberta.

Introduction.

These tests were given to students of the University of Alberta, in various classes, during the last days of January and the first days of February, 1916. The students tested were not, for the most part, members of psychological classes, and none of them were practised in taking such tests. In giving the test by the group method, we wished to see how far it could be used as a reliable index of ability in college studies, when dealing with groups such as the Freshman and Sophomore classes, sex groups, and age groups. We did not attempt (as Travis² did) to discover whether the test gave satisfactory results for *individuals*. For in order to gauge the intelligence of individuals it is generally agreed³ that one kind of test alone is insufficient, and that a series of different tests give better results; and in the second place, tests given to classes are not given under the clinical conditions desiderated by Binet and those who follow his methods;⁴ while finally, even under favorable clinical conditions, Goddard finds the tests for "fifteen" and "adult," of which the present test is a modification, unreliable.⁵

¹ See "Reproduction of Short Prose Passages: a Study of two Binet Tests," by A. Travis, Philadelphia, *The Psychological Clinic*, vol. ix, 1915, pp. 189-209. Miss Travis suggests for use with university students three new passages (203, 204), but has not apparently worked with them herself. Her paper furnishes the material for the present investigation, in which the passages suggested are used for the first time.

² See Travis, *op. cit.*, pp. 191, 192, 193, 201, *et al.*

³ Cf. e. g. "A New Scale of Mental and Physical Measurement for Adolescents, and Some of its Uses," by Helen Thompson Woolley. *Jour. Educ. Psych.*, vol. vi, 1915, p. 521.

⁴ Cf. e. g. "In practice the examination should be conducted in a quiet place, the child being taken alone and as free from distractions as possible." Henry H. Goddard, "Binet's Measuring Scale for Intelligence," *The Training School*, vol. vi, No. 11, 1910. Cf. also "The Binet Measuring Scale of Intelligence. What it is and how it is used," by the same, p. 6.

⁵ "'Fifteen years' and 'Adult' have not proved reliable" Henry H. Goddard, "Standard Method for Giving the Binet Test," *The Training School*, vol. x, April, 1913, last paragraph of article.

The students tested are grouped as follows:

Class	Men	Women	Total
Senior and Graduate.....	20	5	25
Junior.....	24	3	27
Sophomore.....	36	15	51
Freshman.....	42	15	57
Matriculant ¹	13	6	19
Totals.....	135	44	179

Procedure.

The tests were given by R. C. L., who, on entering the classroom, distributed sheets of paper, one to each student, and gave the following instructions: "Please write, at the head of your paper, your name, age in years and months, class, and the time. I am going to read a prose passage. You will be given three minutes in which to write out as much as you can of the *sense* of the passage. The actual wording does not matter. Is there any one who does not understand?"²

After answering questions asked by students, in the course of which the additional information was always given (1) that the papers were required by the department of psychology for purely scientific purposes, and (2) that the results would not in any way prejudice the academic standing of the students, R. C. L. then read the first passage slowly, and the students were subsequently allowed precisely three minutes for the reproduction of the sense of what they had heard. At the end of the three minutes they received the command "Stop—at once please!" The instructor proceeded: "I will now read a second passage in a similar way, and you will reproduce the sense of it in the same manner."

¹ The Matriculant Class is from Alberta College South, a theological college affiliated with the university and situated on the university campus.

² The instructions given are more explicit than those in the experiment reported by Travis (190); this was necessary, as our students were not taking the test as "a regular class-room exercise" (189). It will be noticed that the instructions were to reproduce the *sense*, rather than the wording, of the selections. This was done (1) in order to make the test call forth the same general direction of effort from all the students, and (2) to make it a test for "intelligence" rather than, as Binet puts it, a "memory span for ideas" (see Travis, 201). We also imposed the time-limit of three minutes in order to equalize the time-factor as far as possible, whereas in the experiment reported by Travis, they were allowed to take as long as they pleased (190). This, while correct when trying to obtain results for individuals under clinical conditions (cf. Goddard, "Standard Method for Giving the Binet Test," p. 2, *The Training School*, vol. vi, 1913, No. 2, April), seemed to us unadvisable when dealing with groups, as in our investigation. Miss Travis informs us (1) that as "a regular class-room exercise," the students were allowed to take as long as they pleased, and (2) that there "proved to be no such difference . . . between the maximum and minimum times as to make it advisable to limit the time in any way." Our conditions were different.

We did not think it necessary to allow "a few minutes for rest and relaxation," but proceeded at once to read the second passage, and after that had been reproduced, the third, in a similar manner. The students were then asked, if men, to make a large M, and if women, to make a large W, at the foot of the sheet; after which the papers were collected and class-work was resumed. The whole time taken, from entering the room to having the papers collected, occupied about eighteen minutes.

Marking.

For marking the papers, two methods were adopted, which, following Travis, we shall call "qualitative" and "quantitative." The qualitative method, suggested by Travis as likely to be preferable for the first two selections of prose,¹ ranks the papers with reference to the following qualities: "Judgment in organizing and condensing material, terseness and vigor of expression, and finally, what is hard to describe but easy to recognize, an effect of skill and mastery in the execution of the task."² The quantitative method consists in rating the papers "on points," i. e. in giving unit credit for each idea reproduced. The chief difference is that the quantitative method allows nothing for "coherence," while the qualitative method allows no credit for detached words, which reproduce, perhaps, ideas, but not their connection. For the results obtained by the qualitative method R. C. L. is solely responsible, while J. L. J. carried through much of the quantitative rating. The two methods were applied independently of one another.

The qualitative method contains two parts. The papers were ranked, on the qualitative basis explained above, into five groups, A, B, C, D, E. This was done independently for Selection I, then for Selection II, and then for Selection III. The mark for each selection is called a "score," and for 179 students there are accordingly 537 scores in all. For the purpose of comparing the different class-groups, sex-groups, etc., in which the numbers were unequal, the number of scores was expressed in percentages, so that the groups could be compared in respect of their percentage of A scores, B scores, etc. This represents the first part of the method. In the second part, as cases arose in which one class seemed to counter-balance a weakness in A scores with a superiority in B scores, and thus made this method of comparison difficult, it seemed advisable to devise some means whereby the average score of one group could

¹ Cf. Travis, pp. 203, 204.

² Travis, p. 193.

be compared directly and arithmetically with the average score of another group. For this purpose, numerical values were assigned to A, B, C, etc., in each selection. In order (1) to avoid arbitrariness, and (2) to achieve a basis of comparison with the "quantitative" results, the numerical values assigned have precisely the value of the average A, B, C, etc. obtained in the application of the quantitative method. The exact values assigned were as follows:

	A	B	C	D	E
Selection I.	34.610	24.825	14.034	7.690	1.672
Selection II.	62.465	45.425	27.747	16.240	6.327
Selection III.	43.056	34.273	27.673	20.227	12.500

The significance of these numerical values will be understood when it is realized that the average mark which would be assigned a place in grade A by the quantitative method (34.610) represents precisely the reproduction of 34.6 out of 100 ideas which might possibly have been reproduced in that selection. It is not claimed that every paper to which the score A is given by the qualitative method reproduces exactly 34.6 out of a possible 100 ideas; but treated on the average, as is necessary for group results, it seemed less arbitrary to give to every qualitative A the average mark for the corresponding grade obtained by the quantitative method.¹

RESULTS OBTAINED BY THE QUALITATIVE METHOD.

(a) Class groups.

Class	A	B	C	D	E
Freshman.	5.2	16.2	57.2	13.9	7.5
Senior.	9.3	13.3	49.3	17.3	11.0
Sophomore.	2.0	15.7	51.0	20.3	11.0
Junior.	2.6	14.1	43.6	18.0	21.8
Matriculant.	1.7	14.0	26.3	42.1	15.8

This table shows the distribution of scores according to classes. The Seniors obtain the highest percentage of A scores, the Freshmen

¹ In the paper reported by Travis, the data were ranked as if they were college quiz papers, in five groups D, G, P, N, and F, with the percentages usual at Pennsylvania. On the basis of this standard Travis finds that so many of the better students "make a poor showing" that she tends to regard the tests as "unreliable" (pp. 191, 192, 206). This method is incorrect. "The final appeal in all questions of doubt should be, not to what the examiner might expect . . . but rather to the fact as to what normal children do under such circumstances." (Goddard, "Standard Method, etc.," p. 4.) It was for this reason that we adopted as our numerical values averages derived from what the students actually performed, rather than the "college quiz" standard, which in this case, is (of course) arbitrary.

of B and C, the Matriculants of D, and the Juniors of E scores. The classes are arranged in order of achievement, though difficulty was experienced as to whether the relatively large Senior score in A does not offset the Freshman results in the other grades. To solve this difficulty, the numerical values adopted above were substituted for the actual scores, and the general average scores of the classes, each class being compared with the other students grouped together, are as follows:

Class	Average Score	P. E.	Average Score of Rest	Difference
Freshman.....	23.714	3.76	21.132	2.582
Senior.....	23.334	5.86	21.604	1.730
Sophomore.....	22.053	4.06	21.919	0.134
Junior.....	20.550	4.44	22.360	-1.810
Matriculant.....	17.787	2.43	22.176	-4.389

These figures show the same results as those obtained above, but rather more clearly for purposes of general comparison. In fact, the second tabulation tends to express the results a little more exactly in the present case, for it is more arbitrary to treat all A scores as equal, whether obtained in I, II, or III, than to treat them as of the different average values discovered by the quantitative method.

(b) Sex groups.

It will be noticed that, while approximately equal in respect of C scores, the women preponderate in B and D, the men in the extreme grades, A and E. This preponderance is fairly steadily maintained in the various classes, for which the results are as follows:

Class	Women					Men				
	A	B	C	D	E	A	B	C	D	E
Matriculant . . . .	...	5.6	27.8	66.7	....	2.6	18.0	25.6	30.8	23.0
Freshman..	4.4	15.6	62.2	13.3	4.4	5.5	16.4	55.5	14.0	8.6
Sophomore.	2.2	17.8	44.4	24.4	11.1	1.9	14.8	52.7	18.5	11.1
Junior.....	...	33.3	16.7	50.0	....	2.8	12.5	45.9	12.3	23.6
Senior.....	...	26.7	60.0	13.3	....	11.7	10.0	46.7	18.3	13.3
Totals...	2.3	17.0	48.8	26.3	5.4	4.7	14.5	49.1	17.7	14.0

These results indicate that the general result obtained by comparison of the sex-groups as wholes is fairly consistently maintained in detail. The men tend towards the extremes in greater proportion

than the women, while the women are almost all to be found in the middle grades. But though this difference of distribution is strikingly displayed in this form of marking, it is not easy to see whether the men or the women "do better." As Travis, like most investigators in this field, insists that the women do better, it becomes necessary to transform these marks into their numerical equivalents, in which case we find the results to be as follows:

Class	Average Female	Average Male	Difference in Favor of Female
Senior.....	25.948	22.664	3.284
Junior.....	21.679	19.552	2.127
Sophomore.....	22.666	21.769	0.897
Freshman.....	24.359	24.057	0.302
Matriculant.....	17.038	17.891	-0.853
Totals.....	24.664	21.669	2.995
	P. E. 3.73	P. E. 4.77	.

On the whole, these figures indicate that the results for the sex groups are in a line with similar results on the part of other workers in the field of tests.

(c) Age groups.

As eight of the students omitted to fulfil the instructions respecting their "age in years and months," only 171 students could be compared from the point of view of age. It was decided to compare those below the age of twenty-five with those of twenty-five and upwards, and also to compare students between the ages of eighteen and twenty-four (inclusive) with a group consisting of those above and those below those limits. By the second part of the qualitative method the results are as follows:

Age	Number of Students	Average Score	P. E.	Difference
16-24.....	116	22.906	2.54	2.198 (in favor of 16-24)
25-41.....	55	20.708	2.93	
18-24.....	101	22.819	4.13	1.326 (in favor of 18-24)
16-17 } 25-41 }	70	21.493	4.34	

These results indicate that, taken in groups, students below the age of twenty-five tend, on the average, to obtain a higher score than students above that age.

The students were also compared in "time-groups," to discover whether morning tests gave higher scores than afternoon tests. With the material at our disposal, the results were negligible.

RESULTS OBTAINED BY THE QUANTITATIVE METHOD.

By the quantitative method, marks were assigned to the papers in such a way as to express the percentage of possible work accomplished.¹ Further, (1) for purposes of comparison with the "qualitative" results, and (2) in order to make clear the distribution of scores, a small group of the highest scores was called A, a larger group of the next highest scores was called B, the largest group of scores, distributed closely about the average, was called C, and D and E corresponded, as closely as possible to the number of scores called B and A respectively. The number of A scores, B scores, etc., was then added in the various class groups, age groups, etc., and expressed in percentages, precisely as was done with the similar marks in the qualitative method. While there are differences in detail between the two methods, the average mark for which an A or a B is given is precisely the same in both methods, so that a direct comparison of the results should be possible.

(a) Class groups.

Class	A	B	C	D	E	Average Score	Average of Rest	Difference
Senior.....	12.5	16.6	38.9	16.6	15.3	24.399	22.616	1.783
Freshman.....	10.9	18.4	43.1	16.1	11.5	23.994	22.519	1.475
Sophomore...	12.4	13.0	39.2	16.9	18.3	23.563	22.387	1.176
Junior.....	9.9	18.5	37.0	14.0	19.8	21.576	23.028	-1.452
Matriculant...	5.3	7.0	43.9	14.0	29.8	16.897	23.574	-6.677

Like the qualitative scores, these figures leave it doubtful whether the Freshmen or the Seniors are to be ranked first; but the general averages, which in the application of the quantitative method are rigorously exact, show that the Seniors are to be placed first.

While by the qualitative method the Freshmen were decidedly first, as a group, by the quantitative method, the Seniors receive a slightly higher score. The general proportion between the other classes is much the same by both methods.

(b) Sex groups.

These figures show that, on a quantitative estimation, the women not only preponderate in the three middle grades, but also

¹ For a detailed discussion of the quantitative method, see Appendix.

Class	Women					Men				
	A	B	C	D	E	A	B	C	D	E
Matriculant	....	5.5	55.5	22.2	15.9	7.7	7.7	38.5	10.3	39.9
Freshman	8.9	22.2	42.2	17.7	8.9	11.6	17.0	43.4	15.4	12.4
Sophomore	17.7	17.7	37.7	15.5	11.1	10.2	11.1	39.8	17.6	21.3
Junior	....	22.2	44.4	22.2	11.1	11.1	18.0	36.1	13.9	20.8
Senior	20.0	33.3	40.0	6.7	....	10.5	12.3	38.6	19.3	19.3
Totals	11.3	19.7	42.4	16.7	9.8	10.6	14.1	40.0	15.8	19.5

that they tend to secure more A scores on the whole, and especially in the Senior class. Certain differences between the results obtained by the two methods stand out more clearly when we compare the *average* scores obtained by the application of the quantitative method:

Class	Average Female	Average Male	Difference in Favor of Female
Total scores	23.99	22.49	1.50
Senior	30.68	22.83	7.86
Sophomore	26.85	22.20	4.65
Matriculant	17.68	16.54	1.14
Freshman	24.58	23.78	0.80
Junior	20.82	23.43	-2.61

Here we notice, not only that the differences between the average scores made by the sexes in the various classes are greater, but also that in the descending order of the classes, the Sophomores, who ranked third qualitatively, now rank second, and that the Juniors, who ranked second qualitatively, are now placed last, while the Freshmen and Matriculants have changed places. These and other differences between the two methods of marking the same papers appear clearly by such a comparison.

(c) Age Groups.

Age	Number of Students	Average Score	Difference
16-14	116	25.120	4.957 (in favor of 16-24)
25-41	55	20.163	
18-24	101	25.383	3.666 (in favor of 18-24)
16-17 } 25-41 }	70	21.717	

These figures bear out the results obtained by the qualitative method.

CONCLUSIONS FROM THE RESULTS OBTAINED BY BOTH METHODS.

Without as yet raising the question of the validity of conclusions obtained from these results, it is possible to draw tentatively certain definite conclusions. Where there is a difference amounting to a contradiction between the results obtained by the two methods, we have decided to prefer the "qualitative" results.¹ Our conclusions are as follows:

(a) Class groups. While it is far from easy to decide between the Freshmen and the Seniors, we are inclined, on the basis of the results before us, to consider the Freshman class as the more intelligent on the whole. This superiority seems to us to rest mainly on "natural ability," for a first-year class could hardly claim to have "superior training" as compared with men who have been trained in the institution for four years. The relatively high score of the Seniors, coupled with the fact that they appear yet higher when estimated on a basis which pays regard to quantity rather than quality of the reproduction, seems to us to indicate that the superiority of the Seniors to the Juniors, Sophomores, etc., is largely a matter of superior training, though here too it seems to us that the Seniors have slightly greater "natural ability" than any of the other classes, with the exception of the Freshmen.

In the case of the Sophomores and Juniors, it appears to us that the Sophomore class is decidedly more alert and active, while the work of the Junior class indicates a considerable degree of laziness (cf. the large number of E scores), especially as regards the men students. In regard to "intelligence" we are unable to draw any sharp distinction; the difference appears to us to depend chiefly on persistence as opposed to laziness and unwillingness to throw themselves into work which was not to "count" from an academic point of view.

The difference between the matriculant class and the matriculated students, in spite of one or two excellent matriculant papers, appears to us to be clearly established; in this connection it is interesting to note that, while by the quantitative method all the other classes received a relatively higher score than when judged qualitatively, the matriculant class alone is seen to be still more inferior, an inferiority presumably due largely to absence of training.

(b) Sex groups. In order to understand the results for the sex groups, it appears to us necessary to take together the two main

¹ See Appendix.

conclusions to which the results by both methods point. If we consider the comparison by averages, we should tend to say, like Travis,¹ that the women "do better;" but if we consider the comparative distribution of the scores, especially the A and E scores, it looks as though the men do both better and worse; *i. e.* they seem to exhibit greater excellence (A), and also a considerable degree of laziness (E). Consequently, although the women "do better" in the average, we cannot claim that they are more "intelligent." They seem to be much nearer the general average, whereas the men tend proportionately more towards the extremes, A and E. In the light of this result, it is necessary to conclude that the women are more persistent and less variable as a group, but that the men are not only more lazy, but also more "brilliant;" on the whole, they tend to attain higher results when they do try, though in many cases (as indicated by the proportion of E scores), they were not easily induced to try.

(c) Age groups. From the results obtained by both methods, we conclude that, if these tests are at all reliable in dealing with groups, students will, on the whole, do slightly better in college studies if they are below the age of twenty-five. The fact that the 16-24 group did slightly better than the 18-24 group appears to us to be due to the fact that the individual students under eighteen are rather more able than average individuals of that age. On the whole, then, we conclude that students below the age of twenty-five will tend to get the most out of their lectures and reading, at least so far as ability to reproduce the sense of what they have heard is concerned.

General Conclusions.

(1) Validity of the above conclusions. We are informed by the Controller of Examinations that the Freshman class is considered the ablest "first year" which the university has known for many years; that of the other classes, the Senior year is considered the ablest, the Sophomore year the next in order along the lines of ability approved of in colleges, and that the Junior year, as far as the men are concerned, is not as successful, either in respect of academic attainments or in the mysterious qualities which go to make up "class spirit." We are further informed by the same authority that our general conclusions with regard to sex and age groups are in fair general agreement with what the university administration has come to believe on the basis of examinations. From this infor-

¹ Cf. Travis, p. 202.

mation it would appear that, in dealing with groups of students, the test gives sufficiently accurate results to warrant its use as an instrument of diagnosis. But, for the reasons stated in the introduction, as well as on account of the magnitude of the probable error, we do not recommend its use for mental diagnosis in dealing with individual students: we know of no test which can be used for this purpose when given by group methods.¹

(2) Comparison with the conclusions of Travis. There are two fundamental differences between the paper of Travis and the present investigation which make any comparison of their results difficult. In the first place we used material suggested, but not used, by Travis: the conclusions numbered (1) and (5) in her paper, therefore, dependent, as they are, on material already employed for testing purposes, which is in many respects different from the material suggested by her as more desirable, are incapable of comparison with any results obtained by us. In the second place, Travis is throughout attempting to use tests given by the group method in order to test individuals, and it is from this point of view that we find her stating that her "conclusions are negative." This point of view is particularly apparent in the conclusions numbered (1), (2), and (4). The only conclusion remaining, which is numbered (3), viz. that "women do better in these tests than men," would from our point of view require to be qualified by the words "on the average," and would require to be yet further qualified by insisting on the fact that the men reach a higher standard on the one hand, and on the other exhibit a greater degree of laziness, which is what accounts for the women's apparent superiority in respect of the average.

APPENDIX. DISCUSSION OF THE QUANTITATIVE METHOD AND ITS VALUE.

The passages used in this experiment were suggested by Travis in her article, pp. 203, 204.²

For the purpose of scoring by points, we followed the method of analysis into essential ideas,³ and gave equal credit for each idea thus reproduced. Selection I was analysed into twenty-six ideas, as follows:

- | | |
|------------------------------------|------------------------------------|
| (1) To counterfeit | (5) perpetually |
| (2) the hand of God | (6) without warrant |
| (3) is the boldest of all forgery. | (7) but his own fantastic surmise, |
| (4) He who takes upon him | (8) to unfold |

¹ Travis seems to recognise this towards the end of her paper (see p. 206, conclusion No. 4).

² See Travis, pp. 203, 204.

³ See Travis, pp. 192, 193.

- | | |
|----------------------------------|----------------------------|
| (9) the secret | (18) of those thoughts |
| (10) and unsearchable mysteries | (19) reprobate (thoughts) |
| (11) of high providence | (20) that would wrest |
| (12) is likely for the most part | (21) the sword |
| (13) to mistake | (22) of justice |
| (14) and slander them, | (23) out of God's hand |
| (15) and approaches | (24) and employ it |
| (16) for the most part | (25) more justly |
| (17) to the madness | (26) in their own conceit. |

As there are thus twenty-six possible points, the score, expressed in percentage form, is 3.85 per cent for each idea reproduced. The average total score was 14.034 per cent, which was accordingly allotted the grade C. In the grading, in accordance with the normal curve of distribution,¹ the grades were assigned as follows:²

E per cent	D per cent	C per cent	B per cent	A per cent
0.0-3.85	7.69	11.54-19.23	23.08-26.92	30.76-50.00

This method of scoring, in giving an identical mark for each and every idea reproduced, seems to presuppose that each and every idea is equally hard to reproduce, and therefore deserves equal credit. This is an *a priori* notion, not borne out by an examination of what the students actually achieved. The exact frequency of reproduction of the different ideas was:

Frequency per 100 Students	Number of Idea	Frequency per 100 Students	Number of Idea	Frequency per 100 Students	Number of Idea
35.19	2	16.19	10	3.35	4, 12
34.64	26	13.38	24	2.79	15
31.84	1	11.73	9	2.23	6
21.79	11	10.61	8	1.67	13, 16
20.11	3	9.49	14	1.12	19
18.98	20, 22	6.69	7	0.56	5
17.32	21	5.28	17		
16.75	23	4.47	18, 25		

These results indicate that such ideas as "hand of God," "conceit," "counterfeit," "providence," and a few others were most

¹ Travis (192) seems to approve of Finkelstein's marking system; but according to this ("The Marking System in Theory and Practice," 1913, p. 16) "the theoretically ideal curve of . . . college marks is . . . not the probability curve, but the skewed curve with the mode to the right of the middle of the abscissa." We have followed Boring in thinking this unjustified, and have retained the probability curve. (See E. G. Boring, "The Marking System in Theory," *Pedagog. Seminar*, vol. xxi, 1914, esp. p. 227.)

² The average attained in each of these grades has been given in dealing with the qualitative method above.

readily apperceived and reproduced by the students. But the small figures (only 35 per cent for the highest) show further that no one idea impressed itself on much more than a third of the students. There is thus a considerable degree of variation, and by this method of grading it is possible for two students to secure a similar score, in which, however, the points reproduced by the one consist of relatively essential ideas, while those reproduced by the other may consist of relatively unessential ideas, incoherently strung together. This is an inadequacy inherent¹ in the "quantitative" method, as will be seen more clearly when we consider certain specimen papers:

Specimen Paper I. He who seeks (4) to understand and explain (8) the thoughts and actions of God (? 11) attempts a very hard task. His attempt is sure to end in a frenzy (17). His thoughts (18) are very similar (15-16) to those of a reprobate (19). He seems as though he were trying to take (20) the sword (21) of justice (22) out of the hand of God (23).

Specimen Paper II. To counterfeit God (1-2) is the most presumptuous act of man. To think that man can attain to His thought is only to show conceit (26), especially to imagine that one can do more wisely and more justly (25).

The quantitative grading of these papers would assign I to grade A, and II to grade C. And yet it is clear to the "qualitative judgment" that II is distinctly superior. Qualitatively, in fact, after a careful comparison with the other papers, II was assigned to grade A, and I received the grade C. The one paper shows a real understanding of the "sense of the passage," while I indicates only a mediocre appreciation of the content of what was read.

Selection II was analysed into thirty-four "essential ideas," as follows:

- | | |
|-------------------------------|------------------------------------|
| (1) Exposing | (11) and also that (heating power) |
| (2) his thermometers | (12) of the region beyond |
| (3) to the colors | (13) the extreme red. |
| (4) successive (colors) | (14) Then, |
| (5) of the spectrum | (15) drawing a line |
| (6) solar (spectrum), | (16) straight (line) |
| (7) Sir William Herschel | (17) to represent |
| (8) determined | (18) the length of the spectrum, |
| (9) the power of each (color) | (19) he erected perpendiculars |
| (10) heating (power) | (20) at various points |

¹ In Travis' paper a similar difficulty was experienced, but it seems to have been solved arbitrarily: cf. "a score of 81 per cent . . . strictly should be 79 per cent, but some papers with 11 points were better than others, and some were worse, so that in ranking the papers by percentages the seven papers with 11 "points each were distributed over the range from 81 per cent down to 76 per cent inclusive" (p. 194).

- | | |
|---------------------------------|--------------------------|
| (21) to represent | (28) which showed |
| (22) the intensity | (29) at a glance |
| (23) calorific (intensity) | (30) the manner in which |
| (24) existing at those points. | (31) the heat |
| (25) Uniting the ends | (32) was distributed |
| (26) of all his perpendiculars, | (33) in the spectrum |
| (27) he obtained a curve | (34) solar (spectrum). |

As there are thus thirty-four possible points, the score, expressed in percentages, is 2.94 for one idea reproduced, 5.88 for two ideas, and so on.

In accordance with the normal probability curve, the grades were assigned as follows:

E per cent	D per cent	C per cent	B per cent	A per cent
0.0-11.76	14.71-17.65	20.59-38.24	41.18-50.0	52.94-100

The averages attained in these grades have been given above, in dealing with the qualitative method. The exact frequency of reproduction of the thirty-four different ideas was:

Frequency per 100 Students	Number of Idea	Frequency per 100 Students	Number of Idea	Frequency per 100 Students	Number of Idea
66.36	2	34.07	12	18.44	32
57.54	1	33.51	34	17.98	19
54.18	6	31.84	11, 28	15.64	21
53.06	18	30.16	5	14.53	13, 30
51.38	27	27.37	31	12.82	15
45.25	4	25.69	10	10.61	29
44.70	23	24.58	3, 20	8.94	9, 24
42.34	7, 16	24.02	25	6.69	22
39.67	33	23.46	8	6.14	14
37.43	26	20.11	17		

These results indicate that such ideas as "thermometers," "exposing," "solar," "length of spectrum," "he obtained a curve," and a few others made the most pronounced impression on the students. We further notice that the five ideas mentioned impressed themselves on more than one-half of the students, while no one idea failed to impress less than six per cent of the students tested. From this one might be tempted to infer that the content of selection II came more within the grasp of university students than did the more abstract and "theological" selection I. To some extent this may perhaps have been the case. But an experiment which we

made in order to test this indicates that another factor was still more prominent. A group of twenty students was tested by having selection II read first and selection I second. The results were as follows:

Selection Read First	Number of Students Tested	Average Score for I, per cent	Average Score for II, per cent
II.....	20	87.65	47.24
I.....	159	82.67	105.13

The difference shown by these figures between a prose passage taken first and a prose passage taken second thus appears to be, in one case 40.41 per cent and the other 22.46 per cent, or, on the average for 171 students, 36.62 per cent, on the general basis chosen for comparison. The difference of 36.62 per cent on this basis is not due only to the order in which the passages are read: undoubtedly other factors also enter in, but we have not been able to discover any method for evaluating and discounting the other factors.

In order to illustrate (1) the general inadequacy of the quantitative method in cases where its results conflict with "qualitative" scoring, and (2) the apparently greater ability to reproduce the sense displayed in dealing with selection II, two specimen papers are given which to some extent correspond to the similar papers given as specimens of work done on selection I.

Specimen Paper III. By exposing (1) his thermometers (2) to the sun, Sir Wm. Hershaw (? 7) found the heat (10) of each of colors (9). By drawing a line (15) to represent (17) the length of the ray (? 18) from ultra red to ultra violet (? 12, 13), and by erecting perpendiculars (19) which represented (21) the intensity (22) of each ray (? 24), he was able to draw a curve (27) representing (28) the different colors (? 3) of the spectrum (33).

Specimen Paper IV. Sir William Herschel (7) exposed (1) thermometers (2) to different colored rays (3), obtaining readings for each (8 or 9?), and even for those beyond (12) the red ones (? 13). He then (14) drew a straight line (15, 16) and erected perpendiculars (19) to mark the different colors of the rays in order, making the height of the perpendiculars proportional to the temperature produced. By drawing a curve (27) through the tops of the perpendiculars, he showed (28) graphically the calorific heat of the different rays.

From the purely quantitative point of view, III received the grade A, and IV the grade C; and yet it is obvious to the qualitative judgment that IV is far superior in reproducing the sense of the passage. From the qualitative point of view, IV received A, while III received C. III in fact shows understanding neither of the experiment nor of the object of the "curve," while IV, in spite of the phrase "calorific heat," indicates a thorough grasp of both the really essential points.

Selection III was analysed into fifty-five "essential ideas," as follows:

- | | |
|----------------------------------|----------------------------|
| (1) The Normans | (29) eager (thirst) |
| (2) are a people | (30) of wealth |
| (3) cunning | (31) and dominion, |
| (4) and revengeful. | (32) they despise |
| (5) Eloquence | (33) whatever they possess |
| (6) and dissimulation | (34) and hope |
| (7) appear to be their qualities | (35) whatever they desire. |
| (8) hereditary (qualities). | (36) Arms |
| (9) They can stoop | (37) and horses, |
| (10) to flatter, | (38) the luxury |
| (11) but unless they are curbed | (39) of dress, |
| (12) by the restraint | (40) the exercises |
| (13) of law, | (41) of hunting |
| (14) they indulge | (42) and hawking, |
| (15) the licentiousness | (43) are the delight |
| (16) of nature | (44) of the Normans, |
| (17) and passion. | (45) but on occasions |
| (18) Their princes | (46) pressing (occasions) |
| (19) affect the praise | (47) they can endure |
| (20) of munificence | (48) with patience |
| (21) popular (munificence). | (49) incredible (patience) |
| (22) The people | (50) the inclemency |
| (23) observe the mean | (51) of every climate |
| (24) or rather | (52) and the toil |
| (25) blend the extremes | (53) and abstinence |
| (26) of avarice | (54) of a life |
| (27) and prodigality, | (55) military (life). |
| (28) and in their thirst | |

As there are thus fifty-five possible points, the score, expressed in percentages, is 1.82 for one idea reproduced, 3.64 for two ideas, and so on. The average score was 27.673 per cent, to which accordingly the grade C was assigned. The grades were assigned to the different percentages as follows:

E per cent	D per cent	C per cent	B per cent	A per cent
0.0-14.54	16.36-21.82	23.64-30.91	32.73-36.36	38.18-52.73

The exact reproduction frequency per hundred students, of the fifty-five ideas was:

Frequency per 100 Students	Number of Idea	Frequency per 100 Students	Number of Idea	Frequency per 100 Students	Number of Idea
99.44	1	32.30	39	18.44	37
84.36	2	31.84	50	17.32	20, 25
73.18	43	31.28	32	16.19	53
68.16	47	30.16	33, 42	15.64	19
54.74	55	29.60	38	15.09	12
46.36	14	28.49	22	13.97	30, 31
45.25	3	26.81	52	12.26	5, 21
43.00	18	25.14	34, 35, 46	11.18	36
42.45	10	24.02	45	7.80	8, 48
41.90	41	23.46	40	6.14	16
36.88	51	22.35	28	5.59	23
36.32	54	21.79	17	5.23	29
35.19	9, 26	21.23	4, 6	4.47	49
34.07	13	20.11	27	3.35	44
33.51	11, 15	18.98	7	2.23	24

These figures show that such ideas as "the Normans," "delight," "ability to endure," "military (life)," "indulgence," and a few others made a very considerable impression, as judged by the percentage of students reproducing these ideas. This appears to indicate (1) that the subject was well within the comprehension of the students, and especially (2) that the students were now well practised. Both factors were present, but the test does not provide any way of deciding definitely which factor played the larger part. Two specimen papers are added, in order (1) to illustrate a typical difference between the quantitative and qualitative markings, and (2) to show the kind of work done by the students.

Specimen Paper V. The Normans (1) are a cunning (3) race (2). But unless curbed (11) by law (13), the Norman will indulge (14) in acts of licentiousness (15). So the Norman always despises (32) that which he has (33) in hoping (34) for more (? 35). Dress (39), hunting (41) and hawking (42) occupy the mind of the Norman (44) a great deal (? 43). But, having these properties, the Norman can live under (47) any climatic conditions (51 and ? 50), and the rigors (52 or 53) of a . . .

Specimen Paper VI. The Normans (1) are a cunning (3) and revengeful (4) people (2). There is this difference in the quality of upper and lower classes, that the rulers (18) show a desire to obtain the approval of the people (19 and 21), while the people (22) are

lovers of sport. They tend to luxuriousness, but on occasions (45) can endure (47) the rigor (50) of any climate (51) to which military (55) exigencies may expose them.

From the purely quantitative point of view, V is assigned the grade A, and VI the grade C. But, when judged qualitatively V shows considerable weakness. The connection between the different sentences "But . . . So . . ." is verbal only: there is no inner thought-connection. In VI, on the contrary, the general sense is well understood, though a certain condensation of the thought is evident: *e. g.*, "they tend to luxuriousness, but . . ." seems to sum up both the "luxury of dress" idea and the "indulgence in licentiousness of nature and passion" notion. Qualitatively considered, V was given C, and VI the grade A, after careful comparison with the other papers.

Conclusions as to the value of the quantitative method.

(1) The specimen papers show that the quantitative method can easily assign a higher grade to an inferior paper.¹

(2) The quantitative method assigns higher value to "rote memory" than to intelligent condensation, coherence, and vigor of expression.

(3) Where there is disagreement between the results of the two methods, the qualitative method is likely to be more nearly correct.

(4) The quantitative method has some value, in that it enables us to assign different values to A, B, C, etc., in the different selections in accordance with the different degree of accomplishment in those selections. These differences are due to (a) intrinsic differences with regard to difficulty of reproduction, and (b) the effect of practice, which gives a lower degree of accomplishment in the selection read first and an increased degree of accomplishment in the passages read later. Without the use of the quantitative method all A, B, C, etc., scores would have to be treated as equal, whether assigned in selection I, in II, or in III.

(5) The value of the quantitative method is merely supplementary to results obtained by the qualitative method.

¹ Cf. Travis, p. 194, quoted in note 19.

REVIEWS AND CRITICISM.

The Backward Baby. By Herman B. Sheffield, M.D. New York: Rebman Co., 1915. Pp. vi+186 (illustrated).

This "treatise on idiocy and the allied mental deficiencies in infancy and early childhood," was awarded the Alvarenga prize of the College of Physicians of Philadelphia, July 14, 1914. The author's aim "is to present to the profession a practical survey of the etiology, pathology, diagnosis, and treatment of the diverse mental deficiencies as they occur in children under five years of age. The existing monographs and textbooks on the subject are almost exclusively devoted to the study of feeble-mindedness in children of school age and adults," he remarks, and it has seemed to him, "that with a more thorough knowledge of idiocy and the cognate affections in infants, the physician would be very much better prepared to ameliorate, or possibly cure, these conditions before the underlying lesions have permanently destroyed the cerebral functions."

Amentia he defines as "not an affection *sui generis*, a precise morbid entity, but merely a symptom of a large group of congenital and acquired pathologic conditions, principally of the brain and the ductless glands." He notes a fact which is not sufficiently understood by physicians, and hardly at all by the public, who expect to see any and every kind of mental defect cured by an operation,—“Profound idiocy is frequently encountered with seemingly insignificant structural changes in the brain or elsewhere, and *vice-versa*, gross brain lesions may occasionally be accompanied by only slight feeble-mindedness. As a rule, however," he says, "the predominance of characteristic lesions in certain types of cases" permits "the classification of idiocy and the allied mental deficiencies into distinct groups." The lesions are by no means confined to the brain. "The ductless glands, more particularly the thyroid, thymus, pituitary, and adrenals, are often in a state of rudimentary development or degeneration."

Among the causes of mental deficiency Dr. Sheffield is inclined to give slight importance to heredity, and "to place much more responsibility upon acquired etiologic factors. This reasoning," he believes, "is partly corroborated by the investigations of Scholomowitch, Keller, and Diem, who found that the difference in the degeneracy ratio among the offspring of sane and insane ancestry is only about ten per cent in favor of the former." In the case of notorious families of degenerates he thinks that "continuity of intermarriage among defectives generates the phase of permanent heredity," until it is "exterminated by nature in accordance with the law of natural selection." He does not, however, maintain this judicial attitude with respect to the etiological role of syphilis and alcoholism. Further on in his book he recommends prohibiting the marriage of those members of the community who are "encumbered by chronic brain affection, grave wasting diseases, alcoholism, drug habits, and extreme poverty."

In an excellent chapter on the examination of patients, he remarks what every careful clinician will confirm, "that histories obtained from parents are not always very reliable; first, because the latter are rarely very certain of their

own mental shortcomings and more especially of those of their ancestors; secondly, they are usually loath to admit degeneracy in their immediate family; and thirdly, either for want of good judgment or in the hope of favorably influencing the doctor's opinion, they are very apt to conceal certain mental inferiorities of their infants or to exaggerate their mental powers and thus to mislead the examiner." He suggests that "while the parents are busy relating their experience and responding to questions, and the patient is still in a passive mood, unmolested and unaroused by the ordeal of the physical and mental examination, the physician should avail himself of the opportunity to note the attitude and behavior of both the parents and the child and to size up the general aspect of the case."

A table of weights and measurements of average children up to five years is one of the many valuable features in this chapter, and another is a summary of the child's psychological reactions to ordinary stimuli at one month, two months, and so on up to three years. "A normal infant," he says, "is supposed to acquire the power of seeing, hearing, taste, and touch" in the first four months; "attention, voluntary motion and perception during the second four months; imitation, speech, and understanding in the third four months, and gradually, from month to month, to unfold and to strengthen these qualities, so that at the age of about three years it has developed into a real human being intellectually." He compares the behavior of idiots with that of normal babies, and presents a series of tests adapted to the mentality of six months, twelve months, eighteen months, two, three, and four years.

With regard to prognosis he holds, "It is hardly just or expedient to declare a case of feeble-mindedness unimprovable without giving it a fair test by way of physical and mental training, or, possibly, medical or surgical treatment, whenever there is reason to believe that these therapeutic measures might prove of some benefit to the child, or at least will do no harm." His chapter on training and treatment contains many suggestions which will be valuable to every one who has the care of a mentally deficient child under school age. A good bibliography and index complete the volume.

A. T.

NEWS AND COMMENT.

Program of Pennsylvania State Educational Association.

From December 27th to 30th, inclusive, the Pennsylvania State Educational Association will hold a series of meetings in the Technical High School auditorium, at Harrisburg, Pa. A very interesting program is announced, opening on Wednesday, December 27th, at 1:30 P. M., with addresses of welcome by F. E. Downes, Superintendent of Schools, Harrisburg; Henry Houck, Secretary of Internal Affairs, Lebanon; Martin G. Brumbaugh, Governor of the Commonwealth. John P. Garber, Superintendent of Schools, Philadelphia, will respond.

Among the topics to be discussed during the four day's session are: "Financing the Public Schools." (a) "Relation of State's Finances to the Public School

Appropriation," Robert K. Young, State Treasurer. (b) "Public School Dividends," George W. Gerwig, Secretary of the Pittsburgh Board of Education. (c) "More Revenue for the Public Schools," Nathan C. Schaeffer, Superintendent of Public Instruction. The general discussion will be opened by Harlan Updegraff, School of Education, University of Pennsylvania.

"The Country School Problem." (a) From the Viewpoint of a County Superintendent—President's Address, Eli M. Rapp. (b) From the Viewpoint of a Sociologist—Warren H. Wilson, Teachers College, Columbia University. (c) From the Viewpoint of a Publicist—Herbert Quick, Member of the Federal Farm Loan Bureau, Washington, D. C.

"Physical Education." (a) From the Recreative Viewpoint, George Ellsworth Johnson, Division of Education, Harvard University. (b) From the Viewpoint of the Director of Physical Education, D. A. Sargent, President of the Sargent School for Physical Education, Cambridge, Mass. (c) "Rural Health and Sanitation," Thomas D. Wood, Professor of Physical Education, Columbia University. (d) "Wholesome Living for Girls," Sarah Louise Arnold, Dean of Simmons College. The general discussion will be opened by William A. Stecher, Director of Physical Education, Philadelphia.

"America—Pace Maker or Peace Maker," Charles Zueblin, Boston, Publicist, Lecturer, Author.

"Is There Waste in Modern Education?" William Howard Taft, Ex-president of the U. S.

"A State System of Retirement Funds for Teachers." (a) From the Viewpoint of a Classroom Teacher, Miss Elizabeth Baker, Harrisburg. (b) From the Viewpoint of a Business Man and School Director, Marcus Aaron, Pittsburgh. (c) Present Status of the Teacher's Pension Legislation in the United States, J. George Becht, Secretary of the State Board of Education. (d) General Principals of Retirement Fund Plans, Oliver P. Cornman, Associate Superintendent, Philadelphia. The general discussion will be opened by Raymond W. Seis, School of Education, University of Pittsburgh.

Lectures for Social Workers.

The Pennsylvania School for Social Service, 425 South Fifteenth Street, Philadelphia, is offering the following course of lectures for the fall semester, September 25, 1916, January 26, 1917:

"Industrial Problems," Dr. Frank D. Watson.

"Public Health and Hygiene," Dr. Nathaniel Gildersleeve.

"Housing and Community Sanitation," Mr. Newman.

"Principles and Technique of Case Work, Children," Mr. Edwin D. Solenberger.

Special lectures, Mondays and Thursdays at eleven. These lectures will be of two kinds: (a) Single lectures by representative social workers in Philadelphia and from outside. (b) Short course of lectures on the Feeble-minded, Recreation, Social Legislation, and other subjects not covered in the regular courses of the School.

Special late afternoon or evening classes in a number of additional subjects will be organized if a sufficient number of applications are received. Prospective students may consult Mr. Bernard J. Newman, Director.

The Psychological Clinic

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PHYSICAL AND MENTAL FACTORS INVOLVED IN THE FORMBOARD TEST.

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The purpose of this discussion is to present a tentative analysis of the various physical and mental factors involved in the performance of the formboard test. The existence of these factors places the formboard at the head of the list of clinical tests. That it really holds this exalted position is supported by statements coming from various clinical laboratories. Thus Goddard says, "We have in our laboratory no other test that shows us so much about a child's condition in so short a time as this formboard." (1) Witmer considers the formboard to be first among clinical tests. He may be quoted as follows, "It is one of the best tests for distinguishing the feeble-minded from the child of normal intelligence. It very quickly gives the experimenter a general idea of the child's powers of recognition, discrimination, memory, and coordination. Repetition of the experiment often leads to a conclusion as to his ability to learn." (6) Wallin employs the formboard test in determining intellectual status, to throw light upon the patient's ability visually to identify forms, upon his constructive capacity and his power of muscular coordination. (5) Norsworthy considers the formboard a test of form perception and rate of movement. She also sought to learn something of the individual's learning capacity and his ability to meet a new situation. (2) Sylvester, in the introduction to his standardization of the formboard, values the test as follows, "It appeals to the child's interest, affording him a short and fascinating task which calls for his best efforts, and it helps to free him from the fear and self-consciousness which often interfere seriously in a mental examination. At the same time the test gives the examiner a good general view of the child's mentality

and it usually indicates more or less clearly the nature of his defects." (4).

The above citations serve two purposes. In the first place they show the general agreement among clinicians as to the value of the formboard as a general diagnostic test. In the second place they name the various functions or capacities which are sought to be explored and tested by different examiners. Perhaps no one quoted above intended to name *all* the qualities or capacities revealed by the test, but they no doubt did mean to name those which they considered to be most significantly revealed in the performance of the test. The fact that they did not attempt to catalog it as a test of this or that particular mental function or capacity is of more than ordinary importance. It is an indication of the growing tendency to recognize the complexity and interdependence of the mental functions involved in the performance of apparently very simple tests. In addition, it indicates the great need of carefully studying and analyzing the elementary mental qualities involved in the performance of each test as a basis for correctly evaluating the behavior of an individual.

Perhaps the chief obstacle to a more rapid analytic development of tests has been the desire to express results in quantitative terms in order to establish norms for comparative purposes. To accomplish this aim, since only measurements of objects or qualities belonging to the same general class or order can be compared, investigators have been forced to posit and assume that the particular test which they were standardizing tested only one quality, as memory, imagination, form perception, or rate of movement. If, however, the investigator was aware that other factors were involved and not infrequently exerted a powerful, and only somewhat less frequently a dominating influence on the quantitative expression of an individual's record, he failed to give them the prominence and emphasis necessary to prevent others from falling into the error of being content to assume that only one quality is being tested and that its value is adequately expressed in quantitative terms and may be directly compared, in those terms alone, with the results of others. Group comparisons may be justifiable, but even then we are not safe in concluding that this summation which obscures individualities insures the measurement of the same quality in different groups. When applied to an individual, a comparison with this narrow outlook is sure to be unjust and misleading.

No attempt is made to minimize the value of quantitative measurements and the establishment of norms. That has great value and is an important part of the further development of tests.

The emphasis here is on the careful establishment, proper use, and interpretation of norms. Objection is raised against the habit of assuming that figures tell the whole story. They have value only when supplemented by qualifying terms determined by the requirements of the particular case under consideration.

The value of any test is great or small in direct proportion to the examiner's ability carefully to observe, recognize, and analyze the various mental functions, capacities, or limitations revealed by the subject during his performance of the test. To facilitate rating the performance of an individual on the formboard an attempt is here made to include in one chart many of the more elementary mental and physical factors involved. This is not proposed as an exhaustive list. If revision is needed it will be by addition rather than subtraction. Various other peculiarities of habit and mental traits are often revealed, but it has not seemed advisable to carry the list beyond those factors likely to be revealed in the testing of every individual. This list is intended to be suggestive of possibilities and aims, to stimulate further and more careful observation, and to induce the examiner to cultivate the habit of analyzing behavior. It is in no way intended to preclude further and additional observations.

To evaluate correctly the performance of a given individual a certain amount of information is necessary. There is (1) a slight but constant sex difference in formboard ability running throughout life, men and boys tending on the whole to do the test quicker than women and girls; and (2) an indirect ratio between age and formboard ability up at least to the age of maturity. Consequently sex is chosen as the primary and age as the secondary basis of classification. It is possible that there is a closer correlation between physiological age and formboard ability than between chronological age and formboard ability, but such classification is impossible at present, because there is no ready means of adequately determining physiological development. Although not a part of the established system of classification, it has been found advisable to record the subject's educational or professional standing.

After the sex, age, and educational standing of the subject have been obtained, his performance may be compared with the performances of normal subjects of the same sex, age, and educational standing, or if his performance is so exceptional in any respect that it falls outside the group in which it properly belongs, an attempt should then be made to find in what group a performance such as his naturally falls. A boy six years and two months old must be rated in terms of what boys of this same age do under similar cir-

cumstances. He cannot be expected to give more attention, show more intelligence, planfulness, or powers of observation than boys of his age, but he should be on a par with them. In some respects he may rate near the median, in others he may reach the maximum, and in still others he may fall to the minimum for his age, yet his performance as a whole may be considered medium for his age, because his assets and defects counterbalance one another. It is exceptional to find a normal child consistently above or below par in every respect. His degree of success is determined by the interplay of all the factors involved and by the number, nature, and degree of their variations from the median.

If a subject does so poorly that he falls outside his age group, he may be found to do as poorly as a two or three year old in some respects, while in others he may show normal powers. On the other hand, a subject may be precocious in one or more respects and make a fine record. Whatever the nature of a performance, it should be rated as accurately as possible on every factor involved, by using the median of the subject's age group as the standard. Such ratings give valuable diagnostic material, by showing where the individual excels, where he is defective, in what he may be expected to succeed, and in what to fail. It gives evidence as to why he is thought dull, normal, or precocious by his teachers or parents.

Early in this investigation attempts at the qualitative analysis of the formboard test revealed that faulty evaluation and interpretation of performances are responsible for more mistakes than inherent defects of the tests themselves. It is generally assumed, and perhaps rightly so in many cases, that in a test we are securing the best possible results from the subject, that he is in the best of trim, and is revealing his innate powers. Unless care is taken, the subject is considered unable to do better on other occasions and on other tests. On the other hand, just as serious a mistake may be made by assuming that he will always do as well as he did on this particular occasion. The test may present itself as unusually difficult and thus show the subject at his worst, or familiarity with the test or allied tasks may give a decided advantage. Such differences tend to make results incomparable. If a reliable study and diagnosis is to be made, the individual must be subjected to a large series of tests and given an opportunity to display his powers. But later, when referring to the written record, how shall an individual's performances be interpreted? How shall the significant be distinguished from the insignificant, those tests which presented a real difficulty from those which were mere play? If in connection with

one test he is rated low on muscular coordination, and on another low on attention, are we to understand these ratings to refer to his performance on the particular tests in connection with which they are recorded or shall they be interpreted to represent his maximum ability under any conditions whatever, favorable or unfavorable? In all probability, the examiner himself, if asked this question, could not answer with certainty. He would perhaps reply that such a distinction did not occur to him, but that he likely meant them as ability rather than mere performance ratings. These ratings might prove to be nothing more than a rough expression of a general and indefinite impression instead of a careful analysis of performances.

These considerations and limitations are not peculiar to the formboard. In certain other tests it is still more important to make a careful distinction between types of behavior peculiar to the moment and occasion, and those which actually signify the full strength of an individual's capacities. What is here said of the formboard applies with almost equal force to all tests. Frequently an individual works a test satisfactorily without having any of his powers really tested, because no special demand is made upon them. The test is not, however, without value in such cases as it shows the individual to have adequate powers so far as required for a satisfactory performance.

That analytic ratings may be of the greatest diagnostic value and convey a definite meaning, both at the time they are recorded and later when reference is made to them by the same or another examiner, a careful distinction must be made between those factors and qualities which are involved only to a limited degree, but are not drawn out to their full extent, and those which are actually put to the test, revealed with full force, and measured with certainty. To make these distinctions possible and to insure uniformity in their application, it has been found necessary to propose terms whose meanings are restricted to the above uses. The noun, *epideixis*, (from the Greek, *epideiknumi*, to show), and its adjective form, *epideictic*, literally mean "the showing or exhibition," for the noun, and "the shown or exhibited" for the adjective. When I evaluate and record an individual's *epideixis* of attention and muscular coordination as low, I mean that on the particular occasion and performance referred to, he used and exhibited poor powers of attention and muscular coordination. It constitutes an evaluation of what he actually did. If I meant to convey the idea that I had really tested and measured their full strength and capacity or had other sufficient evidence, gained by considerable experience with the individual or by the results of a long series of tests, for knowing their optimum

limits, i. e. the existing innate power of each quality actually present and available, I could distinguish such rating from the above only by the use of a different term. The noun *hyparxis*, (Greek, *hyparcho*, to be present), meaning existence, and the adjective *hyparctic*. (Greek, *hyparktikos*), meaning existent, are the terms employed to convey this latter meaning. If I rate an individual's hyparxis of attention low, I mean that the amount of attention which he is capable of giving and actually possesses, or could possibly give under any conditions whatever, no matter how favorable, is low. It means that he could, if necessary, under appropriate conditions give so much attention but no more.

Hyparctic ratings are justified only upon clear cut evidence or actual determination of the maximal intensity and ability of the specific factors rated. In the absence of such evidence in respect to any factor the rating must be made in terms of its degree actually discovered, but stripped of the implication that its full strength has been tested and measured. Hyparxis has no element of futurity. It has reference only to that stage of development which the individual has reached and his actual capabilities at that particular stage. The hyparxis of a given boy's energy at the age of twelve is distinctly different from what it was at the age of five. No hyparctic rating *per se* indicates the future possibilities or probabilities of development. It has to do only with actualities, with no reference whatever to possibilities.

It is unfortunate that in practice it is unsatisfactory to attempt to restrict the terms to either of the above uses alone. Either one alone serves the purpose about as badly as the other. If the two uses are born in mind throughout the rating of a performance and recorded as separate ratings, the result is a satisfactory and helpful analysis which for diagnostic purposes is far superior to a mere detailed description and narrative of the performance itself. The time to evaluate the significant features of a performance is during its progress or immediately thereafter, not at some later date from even the most carefully recorded observations. The important thing is not so much what the subject does, but how he does it. The chart is not intended to displace descriptive accounts of behavior. It has an independent function which cannot be subsumed under the head of description.

Owing to the large number of factors involved in performing this test, two fundamental facts must be recognized; (1) that it is impossible to predict what factors will be tested in a given individual, and (2) that the number of possible combinations which may determine his success or failure is practically unlimited. Exactly

what factors will be tested can be determined only by application of the test. These vary from individual to individual and show why the formboard cannot be used as a specific test, *i. e.* a test of a specific mental function. This is true of a larger range of tests than is generally supposed. Strictly speaking there are few if any really specific tests; tests which can be given while the examiner takes a vacation. There is at present too great a tendency to interpret results mechanically. The *tester* gives tests with assurance that he knows exactly what problems he is setting, what they will test and measure, and then upon this illusion, either forgetting or not recognizing that in reality it was an entirely different problem for the child, he proceeds to interpret results.

In evaluating the different factors and qualities a five point scale is used. The highest grade is 5, the medium or median 3, and the lowest is 1. It is often advantageous and frequently essential to make finer distinctions and ratings than the simple five point system permits. Each of these general grades is therefore subdivided into five parts, each bearing the same relation to the other within the group that the corresponding parts of the coarser system bear to one another. Thus the lowest grade, employing the finer system, is 1-1, the median 3-3, and the highest 5-5. The grade 1-3 is the median within the first or lowest general group, and 1-5 is the highest ranking within this same general group. The median grade is assigned whenever there is no evidence of marked variation from the average for the sex and age group.

EXPLANATION AND USE OF TERMS IN CHART.

The chart is arranged to include both hyparcetic and epideictic ratings. The different factors are defined, or explained, and rated only in so far as they are involved in the performance of this test. The particular position which each occupies in the chart is in no way intended to be indicative of its relative importance.

Physical adequacy

A large variety of physical defects and peculiarities naturally fall under this heading, but whatever their nature, they can be classed as anatomical, functional, or both. The specific nature and significance of each defect and asset should be carefully noted. Deformities, over- or under-development, or absence of parts of the body, particularly of the arms, hands, and eyes, are classed as anatomical. Under functional factors come such disturbances as paralysis, choreic movements, and impaired volitional control.

Sensitivity

The subject must have at least fair powers of auditory acuity to understand the spoken directions. Suspicion as to hearing ability is often aroused when the subject, otherwise awake, fails to comprehend the directions. He may by observation grasp the idea that he is to replace the blocks, but fail entirely to get the idea that he is to hurry. Rudolph Pintner and Donald G. Patterson have made some interesting comparisons between the formboard ability of young deaf and hearing children. They conclude that at the Ohio State School for the deaf, "The average entering class of deaf children is apt to be about a year backward in formboard ability and that this backwardness is not made up during the first year in school." Stated merely in quantitative terms, based on time and errors, their report is not satisfying, as it fails to tell wherein the difference lies. Such comparison is probably not fair to the deaf child on account of the different method of giving him instructions. Then, too, a larger number of cases or a second group of hearing children might have reversed even these qualified conclusions. Of special significance is the fact that the difference between the two groups of seven year old deaf children is greater than the difference between the second group of seven year old deaf children and the seven year old hearing children who had had the experience of the preceding year. (3)

Visual acuity is a very important factor, as it may be responsible for apparent defectiveness in other qualities. Poor space perception may be due entirely to defective vision. Poor vision may cause numerous and otherwise inexcusable errors, or may very materially increase the time, because the subject hesitatingly goes no faster than he is able to distinguish the forms with certainty. Although the acuity of vision can in no way be accurately determined by this test, grave defectiveness should be discovered or at least arouse suspicion.

Cutaneous and kinæsthetic sensations play a more important function in the formboard test than is ordinarily attributed to them. They are seldom given a place even in introspective reports. These sensations have the happy faculty of avoiding detection and of rendering valuable service unhonored. If we make them the special object of attention either in ourselves or others, we discover that in their absence the performance would be decidedly faulty. We depend upon vision to recognize the different forms and to associate the blocks with their proper recesses, but we depend upon pressure and kinæsthesia to furnish the final information as to the fit of each block. The eyes follow a block only until it approaches its chosen recess, and then give it no more attention unless it does not fit

securely. There may be some relation between the functional development of tactile and kinæsthetic sensations and the amusing performance of some young children and many feeble-minded who energetically pound in each block with their hands.

Vitality

The energy used by different individuals varies from the person who would break the board if it were at all destructible to the one whose energy is almost zero. In many cases rate is in direct ratio to energy. Some individuals have a high rate with no accuracy, while others are both rapid and accurate workers. With most normal subjects, except in the case of young children, fatiguability is negligible so far as revealed by this test. Small children and the feeble-minded often show fatigue and especially when they meet with repeated failures on successive trials. The health of the subject has, of course, a great deal to do with the general tone and character of his performance.

Movement

Control has reference to the degree of success with which the subject is able to direct and execute his general bodily movements. Good control requires that the subject accomplish easily and readily the intended aim of his movements. Coordination is relatively unmodifiable muscular cooperation, refers to the finer adjustments, and is used in a more restricted sense than control. Good coordination insures precision in grasping and handling the blocks. Initiative has reference to the self-initiated activity of the subject, whether he is a self-starter or requires urging. Without initiative nothing can be accomplished. Excess initiative may cause the expenditure of much energy without compensating success. Dexterity is manual expertness or readiness and skill in using the hands. Dexterity for some people is limited to the use of only one hand at a time. This is the case with most young children. Many adults use both hands successfully at the same time.

Complexity of responsiveness is rated by the appropriateness of the movements made in response to the instructions of the examiner. Poor responsiveness is illustrated by those children who begin to gather the blocks into their arms, put them into their mouths, try to drop or throw the blocks into recesses. Vivacity is shown by ready, animated, and brisk responsiveness.

Attention

Analytic concentration requires that the subject give attention to the different parts and features of the test individually in such a

way as to break it up into its component parts and attend to each separately. It demands an analysis of the situation at the beginning and at its various successive stages. Persistent concentration requires that the subject give his entire attention to the matter in hand until it is completed.

Distribution requires that the attention be properly distributed over the board as a whole or unit, and that no part of the test escape notice. Poor distribution of attention is exhibited when the child confines his attention to a restricted area of the board in an attempt to find the recess for a given block.

Alertness is shown when the child is wide awake and "on the job." It is the facility with which attention can be awakened and employed.

When the test makes an appeal to the child and arouses and holds his involuntary attention, we are dealing with interest. Without interest the child may refuse to do the test, may do it as a piece of drudgery, or as a matter of courtesy to the examiner.

Imagination (general)

Imageability has a very definite influence on formboard ability. Its innate powers determine the intensity and keenness of an individual's images. Without imageability this test cannot be worked, for the subject cannot directly compare block with recess. He must form an image of the block looked at and then hold it in mind while looking for the recess which, when found, must be compared with the image of the block.

Associability refers to the number of discrete things which can be present in consciousness at one time. It is generally considered under the caption of memory span. The individual who is able to hold in consciousness only two or three things at once is at a great disadvantage and is bound to reveal his limitations.

Associability as the measure of possible complexity determines to a considerable extent the complexity of imagination, but great complexity does not necessarily accompany good associability.

Imagination (specific)

For a first class performance on this test the subject must possess good powers of observation. He must be able, in addition to comprehending the test and directions, to employ his attention in such a manner that nothing escapes his notice and that he is constantly aware of the success, failure, and particular stage of his progress on the test. Blocks left out entirely or misplaced and at the end of the

trial still uncorrected, are some of the things which happen with faulty observation.

Understanding is rated according to the degree of comprehension with which the subject grasps the directions and works the test. If he understands what he is to do and then shows that he can do it, he must be credited with fair understanding.

There is such a difference in the readiness or quickness with which individuals comprehend what is to be done that it is advisable to rate quickness of understanding. A mere suggestion or hint is sufficient to give many the clue, while others must be shown or they would never be able to work the test.

An individual may show planfulness (1) by attempting a method in replacing the blocks and reviewing the board systematically in search of the correct recess when it is not seen at once, and (2) by removing the blocks in a predetermined order to facilitate replacing them on the third trial. It is often found very difficult to distinguish between an intentional plan and an accidental plan of removing the blocks, for both look alike and serve the same purpose.

Intelligence is the ability of an individual to solve what for him is a new problem. (7) The formboard is no more a test of intelligence than a test of the other factors here listed. In many performances, perhaps most performances, there is no ground of inference either for or against the intelligence of the individual.

Perception of form is used as ability to discriminate differences in shape between different blocks and different recesses, and to recognize the resemblance between each block and its recess.

Trainability and retentiveness of memory can be only estimated in the majority of cases. Frequently the formboard serves as an adequate measure, especially of the former. Both are essential for a normal performance and have a direct bearing on formboard ability.

Attitude

Adaptability refers to the individual's behavior and bearing in adjusting, accommodating, and fitting himself in with these new and changed conditions. Good adaptability requires that the individual either appear accommodated from the very first or else be able to adjust himself readily. Some conduct themselves as well as if coached for the occasion. Others with poor adaptability are out of harmony with their surroundings.

Assurance is used in much the same sense as self-confidence, the difference being that confidence is founded on reasoning, while assurance is largely a matter of feeling. A reasonable degree of posi-

tiveness or assurance is essential. There is not necessarily, however, a direct relation between degree of assurance and formboard ability. An absolute lack of assurance accomplishes nothing. In this case the child does nothing without encouragement and assent from the examiner for every move he makes.

The spirit of competition or rivalry is an important contributing factor, and is rated under the heading of competitiveness. Some subjects show a very high degree of competitiveness and others a very low degree.

Painstaking refers to attitude toward or habits of work. It is characterized by careful attention. The painstaking individual is scrupulous and faithful in performance. He is dependable and reliable in the discharge of his duty, *i. e.* he can be depended upon to do his best, but his best may be far below the standard for his age group. He is rated in terms of the faithfulness with which he applies himself to the best of his ability, not in terms of his ability and not in terms of the resulting success.

Poise as defined by Sylvester is "ability to work at one's maximum speed without losing control and getting confused. When a child in his efforts to place the blocks quickly, over-hurries and gets flustered so that he makes numerous and inexcusable errors or hesitates in a semi-dazed way, he does so because he is lacking in this quality which we have chosen to call poise." (4)

Shyness frequently has a definite influence on formboard ability. When present it should be recognized by the examiner and given its appropriate rating. An individual capable in other respects may be shy and on that account make a poor record.

Individuals may approach the test with predetermined ideas concerning the nature of the test and the conditions under which it is to be taken. Such ideas, depending on their nature, may hinder or facilitate the performance and should be rated accordingly under their appropriate heading, H being used for hinder and F for facilitate.

Tractability has to do with manageability or the ease with which the subject is controlled or governed. It takes account of how he submits to discipline, and refers to his obedience. Surprising revelations are often made in this short and simple test.

Miscellaneous

The specific nature of the laboratory conditions under which the test is worked must be taken into consideration in rating a performance, and should be rated in the same manner as other factors. The child is not held responsible for poor laboratory conditions, but if

they exist he might reasonably be granted the privilege of registering a complaint. Good laboratory conditions demand the absence of all extraordinary stimuli except the formboard.

Two methods may be employed in replacing the blocks. The child generally picks up a block and then glancing over the board searches for its recess. Normal children employ this method in about ninety-nine per cent of the cases. By the other method the child chooses a recess to be filled, sometimes taking the recesses in a definite order across the board, and then searches through the pile of blocks to find the one to fit the recess chosen to be filled next. If he gets a wrong block, he replaces it in the pile of blocks and resumes his search for the correct one. This method prolongs a trial and gives a very bad time record. Frequently these two methods are used by the same subject, but this latter method is generally used only in placing one or two blocks. No attempt is made to grade method, because no satisfactory criterion is available. A record is kept of which method is used in making the shortest trial.

Imitation is placed under miscellaneous because it, too, cannot be rated. It should be noted that a child usually imitates to his own disadvantage, making a worse time record than he would otherwise. If on the first trial the examiner throws the blocks out into the tray the child may try to throw them into their recesses instead of setting them in carefully and firmly. On the second trial he may try to grasp an entire pile of blocks in one hand as the examiner did in taking them out. On the third trial he may attempt to remove the blocks by a mixed arrangement as the examiner did on the second trial.

Summation Rating

The general attitude or feeling of the examiner toward the performance as a whole, considered in terms of the impression he has of what others of the same sex and age do, is graded as impressional rating.

As another basis for summation rating the time of the shortest of the first three trials according to the standard method is recorded and compared with the proper chart of distribution. If the record falls within the limits of its sex and age group, it is located in that group according to the quintile within which it falls. If a record lies outside its own group, the individual's formboard ability must be rated accordingly.

Formboard age is not synonymous with mental age, and is used only in comparing the formboard ability of children of different ages. The individual is assigned for his formboard age the age of

that group nearest whose median time his record lies. Thus twenty per cent of thirteen year old boys have a formboard age of less than ten years.

Competency (social)

This test alone does not enable us to decide definitely and finally upon the subject's social ability and conformity. If we note carefully and evaluate correctly the various factors involved and exhibited, we have evidence which should enable us to make fairly reliable inferences concerning ability and conformity. We must, however, not lose sight of the fact that such rating is merely an estimation and not a measurement. The formboard should give sufficient indication of the subject's weaknesses and capacities to enable the examiner to proceed directly to the specific tests necessary for confirmation. Its usefulness as a test varies directly as the examiner's ability to interpret and evaluate performances. It is, therefore, highly important that the test be kept constantly in mind as a device for learning something about the subject's ability and conformity.

EXPLANATION OF THE RATINGS OF WILLIAM ON CHART 1A.

The formboard test was given William according to the standard method immediately after his arrival at the Clinic. The only information at hand was that he is a boy eight years and one month old. He was rated by two trained observers according to the method already described. Both rated this one performance, but made their ratings independently. In ten factors the grades were exactly alike, in thirty-five cases the grades fell within the same quintiles, and in only two instances were the differences more than five points of the finer grading system. The nearness of the two ratings, together with facts developed during the remainder of the clinical examination, evidence the practical usefulness of the chart.

Physical adequacy

He had neither anatomical nor functional defect to interfere with this test. He appeared as able for it as most boys his age, and was accordingly given median rating.

Sensitivity

So far as shown by this test he had normal auditory, cutaneous, and kinæsthetic sensations. He appeared to be hindered by poor sight and grave suspicion was aroused as to his visual acuity.

CHART 1 A.* ANALYTIC CHART FOR FORMBOARD WITH RATINGS OF WILLIAM.

Name: William. Sex: Boy. Age: 8 yr. 1 mo. School Grade: Special Class.		Date:		Ratings	
				Epidictic	Hyparctic
Physical Adequacy . . . {	1. Anatomical			3	
	2. Functional			3	
Sensitivity {	3. Auditory			3	
	4. Visual			2-3	
	5. Cutaneous			3	
	Kinaesthetic				
Vitality {	6. Energy			2-3	2
	7. Rate			2-3	
	8. Fatiguability			3-1	
	9. Health			3	
Movement {	10. Control			2-5	
	11. Co-ordination			3-2	
	12. Initiative			2-3	2
	13. Dexterity			3-1	
Responsiveness {	14. Complexity			3-2	
	15. Vivacity			2-3	
Attention {	16. Concentration A			2-4	
	17. " P			3	
	18. Distribution			2-5	
	19. Alertness			2	2
	20. Interest			2-2	
Imagination (general) . . {	21. Imageability			3-1	
	22. Associability			2-4	2
	23. Complexity			2	
Imagination (specific) . . {	24. Observation			3-4	
	25. Understanding			3-1	
	26. " Q			3-1	
	27. Planfulness			3	
	28. Intelligence			2-5	
	29. Form Perception			3-1	
Memory {	30. Trainability			2	2
	31. Retentiveness			2-5	
Attitude {	32. Adaptability			3-1	
	33. Assurance			3-1	
	34. Competitiveness			2	
	35. Painstaking			3	
	36. Poise			3	
	37. Preperception F				
	38. " H				
	39. Shyness			3	
	40. Tractability			4	
Miscellaneous {	41. Lab. conditions			3	
	42. Method			b-r	
	43. Imitation			0	
	44. Shortest trial time			53	
Summation Rating . . . {	45. Formboard ability			2-1	
	46. " age			?	
	47. Impressional			2	
Competency (Social) . . . {	48. Ability			2-3	
	49. Conformity			3	

* It will be observed that the qualities enumerated under the general heads —Vitality, Movement, Attention, Imagination, etc., are the same as on Dr. Witmer's diagnostic chart, used at the Psychological Clinic of the University of Pa. See THE PSYCHOLOGICAL CLINIC, Vol. IX, No. 8, Jan., 1916, p. 229.

Vitality

Both energy and rate were distinctly below that employed by the ordinary eight year old boy. They were so far below and used in such a way that both examiners rated him as unable to employ as much energy, even at his best, as an eight year old ordinarily uses. As is shown by a rating of three from both examiners, nothing unusual was noted concerning his fatiguability and health. He thus falls far below normal in vitality.

Movement

His control is better than his energy and rate. His coordination is better than his control, and is, in fact, good enough for his age. His initiative is considerably below normal and falls far short of that generally exhibited by boys of his age. Boys of his age normally use more than he could possibly muster up. He showed low normal dexterity for his age. The complexity of his responses was as good as need be and was not responsible for his poor record. His epideictic vivacity was very low.

Attention

His epideictic analytic concentration, distribution of attention, and interest were distinctly low. Alertness was given a low hyparctic rating. The persistence of his attention was sufficient for his age.

Imagination (general)

There is a question as to where he should be rated on imageability. The evidence is strongly in favor of putting him entirely below his age group. About associability there is no question, for in it he is distinctly poor. That the low hyparctic rating of associability here is justified, was proven later by the fact that he has a memory span for only three digits. Complexity of imagination is also on the borderline.

Imagination (specific)

His observation was scarcely as good as it should be for an eight year old boy. In understanding and quickness of understanding he comes within the lower limits of his age group. His poor performance was thus not entirely due to inability to comprehend the task. His planfulness was about on a par with his understanding. His intelligence was not put to any great test, but so far as revealed was scarcely of as high grade as it should be. His perception of form was good enough to enable him to perform the test at a greater rate.

The fact that he confused some of the blocks may have been due to poor vision, inadequate space perception or poorly directed attention. In trainability and retentiveness he fell distinctly below the performance level of his sex and age group.

Attitude

In adaptability and assurance he comes within the lower limits of his age group. Lack of the spirit of rivalry or competitiveness characterized his whole performance. He did not hurry or work with a winning spirit. So far as painstaking, poise, and shyness were involved, there was nothing unusual. They did not tend to give him a bad record. The highest rating in any factor is in tractability.

Miscellaneous

The laboratory conditions were satisfactory. There were no important disturbing factors and nothing in them to give an excuse for his poor performance. His method was to find the recess for a block after picking it up. This is the best method. He did not imitate. His shortest trial time record was 53 seconds.

Summation Rating

His time record is much longer than that of any normal eight year old boy. His formboard ability is very low. It is just about that of a four year old child. His performance impressed one as very bad, even when not carefully analyzed.

William was rated distinctly low in ability by both examiners. This rating for his age is virtually a diagnosis of feeble-mindedness. His conformity was considered good enough for a lad of his age and was assigned the median rating of three. The ratings in ability and conformity are merely inferences based on the evidence obtained from this one performance and are not offered as final diagnoses.

In less than an hour after the above ratings were completed, William was given a careful clinical examination. He was again given three trials on the formboard by the standard method, but succeeded in reducing his time only two seconds, from 53 to 51 seconds. His performance was but little better than on the first three trials. His memory span was found to be limited to three digits. Other details of the examination cannot be given here, but it is of interest to note that he was diagnosed as an idio-imbecile, custodial case, due to developmental degeneracy of intra-uterine origin.

RATINGS AND DIAGNOSIS OF MARY.

Owing to the lengthy descriptions of the chart already given, it is unnecessary to give a detailed description of the ratings of

CHART 1 B. ANALYTIC CHART FOR FORMBOARD WITH RATINGS OF MARY.

Name: Mary. Sex: Girl. Age: 10 yr. 4 mo. School Grade: Special Class.		Date:		Ratings	
				Epidiactic	Hyparctic
Physical Adequacy	{	1. Anatomical	3		
		2. Functional	3-1		
Sensitivity	{	3. Auditory	3		
		4. Visual	2-3		
		5. Cutaneous	3		
		Kinaesthetic			
Vitality	{	6. Energy	2-5		
		7. Rate	2-3		
		8. Fatiguability	3		
		9. Health	3		
Movement	{	10. Control	2-4		
		11. Co-ordination	2-3		
		12. Initiative	3-1		
		13. Dexterity	3-1		
Responsiveness	{	14. Complexity	2-5		
		15. Vivacity	3-1		
Attention	{	16. Concentration A	2-2		
		17. " P	2-2		
		18. Distribution	2-4		
		19. Alertness	2-3		
		20. Interest	2-3		
Imagination (general)	{	21. Imageability	2-5		3
		22. Associability	2-3		
		23. Complexity	2-3		
Imagination (specific)	{	24. Observation	2-1		2
		25. Understanding	2-3		
		26. " Q	2-3		
		27. Planfulness	2		
		28. Intelligence	2		
		29. Form Perception	2-1		
Memory	{	30. Trainability	2-1		
		31. Retentiveness	2-1		
Attitude	{	32. Adaptability	2-2		
		33. Assurance	2-5		
		34. Competitiveness	2-1		
		35. Painstaking	2-1		
		36. Poise	3		
		37. Preperception F			
		38. " H			
		39. Shyness	3		
		40. Tractability	2-4		
Miscellaneous	{	41. Lab. conditions	3-1		
		42. Method	b-r		
		43. Imitation	0		
		44. Shortest trial time	140		
Summation Rating	{	45. Formboard ability			
		46. " age	1		
		47. Impressional	3(?)		
			2		
Competency (Social)	{	48. Ability	2-3		
		49. Conformity	3		

Mary. Her ratings are included because some of them stand in marked contrast with those of William. Reference to the chart should give a fair clinical picture of her performance. The only information available concerning Mary at the time she was given this test, was that she was a girl ten years and four months old. This same afternoon she was given a thorough mental examination and the following diagnosis was made: "Cerebroathy leading to imbecility and slight spastic paraplegia: an idio-imbecile (Barr classification)."

The ratings of a normal child are not given, because they show so little variation from the median that we can do no better than give them a normal or medium rating in most of the factors. In one or two of the factors there is generally sufficient variation to require a rating slightly above or below the median, but nearly always coming within the age group.

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POINT SCALE RATINGS OF NINETY-THREE DEPENDENT CHILDREN.

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In the year 1915-16 the writer became very much interested in psychological, educational, and sociological problems relating to dependent children. A survey of psychological literature revealed the fact that but little had been done in this field. A little more had been done along sociological lines.

The problem was to determine the mental status of dependent children and to interpret as far as possible the results of the investigation. The superintendent of one of the county homes for orphan children gave permission to test the dependent children in his charge. There were 93 children in the home at that time, ranging in age from 3 to 17 years.

The tests of the Yerkes-Bridges-Hardwick Point Scale were given to these children, and had time permitted several performance tests would also have been given. Attention is called to the fact that while the Yerkes Point Scale is one of the best of its kind, the results must not be considered as dogmatic. The work was facilitated by an eugenic survey being made of the county by Dr. Thomas Haines, Director of the Ohio Board of Juvenile Research. The 93 children in the county home came from all parts of the county. Nine were colored, and several others were children of foreign-born parents. All of the children were tested by the writer. In only a few instances was any great difficulty found in getting the children to respond, the failure being due to the low mentality of the subjects. Most of the children became immediately interested and tried to do their best. As stated above, the Yerkes-Bridges-Hardwick Scale was used. The mental age was calculated from the norms used by Yerkes. The data was subjected to a very rough test using Goddard's 3 and 2 bases of diagnosing feeble-mindedness and Pintner and Patterson's 3 per cent hypothesis. The main difference between the two methods (in results) is, that the latter method reduces the number of feeble-minded one-half and about doubles the backward group. This I believe is closer to the actual state of affairs. It is my firm belief that the majority of workers have been diagnosing many as feeble-minded, who in reality are only backward.

The cases were then diagnosed by using — .75 I.Q. (Intelligence

Quotient, or coefficient of mental ability) as diagnostic of feeble-mindedness. Stern advocates the I.Q.; Kuhlman, Terman, and Bobertag use it. The quotient is arrived at by dividing the mental age by the chronological age. Some writers have considered the child feeble-minded if the quotient falls below .80. Stern holds, however, that an I. Q. between .71 and .80 does not always denote feeble-mindedness. Pintner has clearly demonstrated that an I. Q. of .80 is too high a limit for feeble-mindedness, and that this method is totally inadequate for children of sixteen and over. Several of our cases fell into this upper age group. Instead of using — .80 as the line of demarcation between the feeble-minded and the normal, I am using — .75 which is much more conservative.

After thorough consideration I cannot help but feel that Pintner and Patterson's psychological concept of feeble-mindedness greatly clarifies our ideas as to who is feeble-minded, and at the same time, offers a self-perfecting method of determining whether an individual is feeble-minded, backward, normal, bright, or very bright. A sympathetic understanding of the principles laid down by Kuhlmann in the June, 1915, issue of the *Journal of Psycho-Asthenics*

TABLE I. POINTS SCORED ON THE POINT SCALE BY NINETY-THREE DEPENDENT CHILDREN, ARRANGED IN CHRONOLOGICAL YEAR GROUPS, AND IN ORDER OF POINTS SCORED, WITH MEDIAN AND AVERAGE ATTAINMENTS.

Ages....	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Scores...	3*	1.5* 3* 17	2* 17 20 21 26	17 19 22 29	20 23 31 49	26 29 30 32 36 46 46	27 31 35 36 41 46 56 59	26 32 39 41 44 46 49 50 59	46 47 50 52 54 56 57 61	37 38 50 52 54 56 62 62 63 64 65 70	47 53 53 58 60 62 62 62 63 64 65 70	22 44 53 58 62 62 62 62 63 64 65 70	41 53 59 63	46 46 50 59 67	46 62
Total...	1	3	5	4	4	8	9	10	11	8	13	6	4	5	2.
Median..	..	..	20	20.5	27	34	41	45	52	52.5	62	60	56	50	54
Av. Dev..	..	..	4.6	3.7	9.2	5.9	9.1	7.9	3.8	6.0	4.3	13.2	7.0	6.8	8.0
Averages..	..	..	18.2	21.7	30.7	35.1	42.3	44.3	52.4	50.2	59.9	54.5	54	53.6	54

* The Mental Age as determined by Huey's method. See Huey, E. B. Syllabus for Clinical Examination of Children.

will do much toward preparing one to accept the concept and method of Pintner and Patterson.

Table II gives in the first column the age of the child; the second column, the score attained by the child; the third column, the corresponding mental age; in the fourth, the years accelerated

TABLE II.

Age	Score	C. M. A.	Years, + or -	3 & 2	3% H.	Age	Score	C. M. A.	Years, + or -	3 & 2	3% H.	Age	Score	C. M. A.	Years, + or -	3 & 2	3% H.
3	3*	3	0	N	N	9	49	8.8	-0.2	N	N	12	62	10.6	-1.4	B	B
4	1.5*	1.5	-2.5	F	F	9	56	9.5	+0.5	N	N	13	47	8.6	-4.4	F	B
4	3*	3	-1.0	B	B	9	59	10	+1.0	Br.	N	13	53	9.1	-3.9	F	B
4	17	4.5	+0.5	N	N	10	26	5.5	-4.5	F	F	13	53	9.1	-3.9	F	B
5	2*	2.0	-3.0	F	F	10	32	6.5	-3.5	F	F	13	56	9.5	-3.5	F	B
5	17	4.5	-0.5	N	N	10	39	8	-2.0	B	F	13	60	10.2	-2.8	B	B
5	20	4.8	-0.2	N	N	10	41	8.2	-1.8	B	B	13	61	10.5	-2.5	B	B
5	21	4.9	-0.1	N	N	10	44	8.4	-1.6	B	B	13	62	10.7	-2.3	B	B
5	26	5.6	-0.6	N	Br.	10	46	8.5	-1.5	B	B	13	62	10.7	-2.3	B	B
6	17	4.5	-1.5	B	B	10	47	8.6	-1.4	B	B	13	62	10.7	-2.3	B	B
6	19	4.8	-1.2	B	B	10	49	8.8	-1.2	B	B	13	63	10.8	-2.2	B	B
6	22	5	-1.0	N(?)	N	10	50	8.9	-1.1	B	B	13	64	11	-2.0	B	B
6	29	6	0	N	N	10	69	11.5	+1.5	Br.	Br.	13	65	11.1	-1.9	B	B
7	20	4.9	-2.1	F	B	11	46	8.5	-2.5	B	B	13	70	11.6	-1.4	B	N
7	23	5	-2	F	B	11	47	8.6	-2.4	B	B	14	22	5	-9	F	F
7	31	6.5	-0.5	N	N	11	47	8.6	-2.4	B	B	14	44	8.4	-5.6	F	F
7	49	8.8	+1.8	N	V. Br.	11	49	8.8	-2.2	B	B	14	58	9.8	-4.2	F	B
8	26	5.5	-2.5	F	B	11	50	8.9	-2.1	B	B	14	62	10.6	-3.4	F	B
8	29	6	-2.0	F	B	11	52	9	-2.0	B	B	14	62	10.6	-3.4	F	B
8	30	6	-2.0	F	B	11	53	9.1	-1.9	B	B	14	79	14.3	+0.3	N	N
8	32	6.5	-1.5	B	B	11	54	9.3	-1.7	B	B	15	41	8.2	-6.8	F	F
8	36	7.5	-0.5	N	N	11	56	9.5	-1.5	B	B	15	53	9.1	-5.9	F	B
8	36	7.5	-0.5	N	N	11	57	9.6	-1.4	B	B	15	59	10	-5.0	F	B
8	46	8.5	+0.5	N	N	11	61	10.5	-0.5	N	N	15	63	10.8	-4.2	F	B
8	46	8.5	+0.5	N	N	12	37	7.5	-4.5	F	F	16	46	8.5	-7.5	F	F
9	27	5.8	-3.2	F	B	12	38	7.9	-4.1	F	F	16	46	8.5	-7.5	F	F
9	31	6.4	-2.6	F	B	12	50	8.9	-3.1	F	B	16	50	8.9	-7.1	F	F
9	35	7	-2.0	F	B	12	52	9	-3.0	F	B	16	59	10	-6.0	F	B
9	36	7.5	-1.5	B	B	12	53	9.1	-2.9	B	B	16	67	11.3	-4.7	F	B
9	41	8.2	-0.8	N	B	12	54	9.3	-2.7	B	B	17	46	8.5	-8.5	F	F
9	47	8.5	-0.5	N	N	12	56	9.5	-2.5	B	B	17	62	10.6	-6.4	F	B

or retarded (subtracting column 3 from column 1); in the fifth the diagnosis of the child or the usual 3 years retardation above 9 and 2 years retardation below 9 as being diagnostic of feeble-mindedness; and in the last column the diagnosis based upon the hypothesis that 3 per cent of unselected children in an average community are

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TABLE III. SHOWING GODDARD'S 3 AND 2 BASIS OF DIAGNOSIS, AND PINTNER AND PATTERSON'S 3 PER CENT HYPOTHESIS.

Age	3		4		5		6		7		8	
	3 & 2	3% H.	3 & 2	3% H.	3 & 2	3% H.	3 & 2	3% H.	3 & 2	3% H.	3 & 2	3% H.
F. M.....			1	1	1	1			2		3	
B.....			1	1			2	3		2	1	4
N.....	1	1	1	1	4	3	2	1	2	1	4	4
Br.....						1						
V. Br.....										1		
Total.....	1	1	3	3	5	5	4	4	4	4	8	8

Age	9		10		11		12		13		14	
	3 & 2	3% H.	3 & 2	3% H.	3 & 2	3% H.	3 & 2	3% H.	3 & 2	3% H.	3 & 2	3% H.
F. M.....	3		2	3			4	2	4		5	2
B.....	1	5	7	6	10	10	4	6	9	12		3
N.....	4	4			1	1				1	1	1
Br.....	1		1	1								
V. Br.....												
Total.....	9	9	10	10	11	11	8	8	13	13	6	6

Age	15		16		17		All Ages		All Ages, per cents	
	3 & 2	3% H.	3 & 2	3% H.	3 & 2	3% H.	3 & 2	3% H.	3 & 2	3% H.
F. M.....	4	1	5	3	2	1	36	14	38.7	15.0
B.....		3		2		1	35	58	37.6	62.3
N.....							20	18	21.5	19.3
Br.....							2	2	2.1	2.1
V. Br.....								1		1.0
Total.....	4	4	5	5	2	2	93	93	99.9	99.7

feeble-minded, 22 per cent backward, 50 per cent normal, 22 per cent bright, and 3 per cent very bright. The letters in the table are F=Feeble-minded, B=Backward, N=Normal, Br=Bright, and V. Br.=Very Bright.

Table III gives the distribution of the children in the five-fold classification above referred to, by chronological age, using the 3 and 2-year basis, and also the 3 per cent hypothesis of Patterson and Pintner.

TABLE IV. INTELLIGENCE QUOTIENTS OF NINETY-THREE DEPENDENT CHILDREN, ARRANGED IN CHRONOLOGICAL YEAR GROUPS, AND IN ORDER OF THE I. Q. WITH MEDIAN AND AVERAGE ATTAINMENTS.

Ages....	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Scores...	100	50 75 100 100	45 80 88 96 100	67 79 82 100	65 73 86 120	70 75 85 88 90 94 100 103	60 71 80 81 89 96 100 105	56 67 79 80 82 83 85 86 88 115	76 76 77 73 77 79 81 81 82 84 90	61 63 72 73 69 73 75 77 77 81 82 84 87	64 65 67 66 70 71 75 77 77 81 82 84 87	36 60 66 70 70 71 93	53 58 64 70 70	55 55 58 63 75	55 66
Total...	1	3	5	4	4	8	9	10	11	8	13	6	4	5	2
Median.	100	75	88	80.5	79.5	89	89	82.5	79	73.7	77	68	61	58	60.3
Av. Dev.	0	16.6	14	9	17	8	11	9	3.2	4.6	5.6	12	5.8	5.6	5.5
Averages	100	75	82	82	86	87.6	86.2	81.9	80	71.6	75.4	66	61	61	60.5

We may speak of those scoring between 0.70 and 0.75 I. Q. as a group of "doubtfuls." We have just ten such cases. By using — .75 I. Q. as diagnostic of feeble-mindedness, we find 35 cases in that category, or 37.6 per cent of our cases.

INTERPRETATION AND CONCLUSIONS.

The diagnosis of our data shows clearly that many of the dependent children are either feeble-minded or backward. In a recent investigation of the mental status of dependent children, Pintner found the chief characteristic to be backwardness, rather than feeble-mindedness. However, he found the percentage of feeble-mindedness much larger than what would be found among the ordi-

nary school population. A still lower percentage was found in tests given to fifty children at a children's home by Miss Rodebaugh. Only 12 per cent of her number were found to be definitely feeble-minded, although 48 per cent were backward. Also 4 per cent of her cases tested more than one year above age.

The New York State Board of Analysis and Investigation tested a large number of dependent children with about the same results,—namely, that dependent children are much inferior to the public school children, and that the great majority of the feeble-minded and backward cases are products primarily of bad heredity and absence of prenatal hygiene, rather than the result of faulty surroundings.

Stenquist, Thorndike, and Trabue found in their investigation of the mental status of dependent children, that “these dependent children as a group are much below ordinary children of corresponding ages in the sort of abilities tested by the Binet, completion, and reading tests. They differ of course among themselves. We find one child of much promise, forty-nine of nearly average ability or better, while forty-eight are four years or more behind, and the remaining three-fifths are from half a year to four years behind.”

Using the three per cent hypothesis, I found 15 per cent of my cases to be definitely feeble-minded; 62.3 per cent backward; 19.3 per cent normal; 2.1 per cent bright; and one child very bright. My results show a much larger percentage of feeble-minded and backward children than was found by Rodebaugh.

The relation between dependency and the mentality of the dependent is, as we have seen, a most important problem both to clinical psychology and to society in general. The present study shows that the failure of the child to make much progress in the Children's Home or with its foster parents when placed out, is often due to inherent feeble-mindedness. In a study of the heredity of our feeble-minded cases, Dr. Haines and his social worker found that many of the children had parents, brothers or sisters, or near kin in the State Hospital for the Insane, the State Hospital for Epileptics, the Feeble-minded Institution, the Industrial or Reform Schools, or else in the County Infirmary. Their investigations also show conclusively, that many of these feeble-minded dependent children come from syphilitic parents, or feeble-minded parents. The social conditions of the home would also point to feeble-mindedness in the family. Many of the children are illegitimate. Parents seldom visit their children, or send them anything after they have become public charges. One single case will serve to illustrate the

conditions found by the writer. Five children (brothers and sisters) in the Home have an idiotic mother and a syphilitic father. These children do not play with other children. Three of them cannot talk. Terman also shows, that we cannot lay the low record of such children at the feet of "environment." By the Pearson method, the correlation between intelligence and social status is .40, a result which is fully in harmony with the earlier findings of Binet workers. As Terman says: "The usual assumption has been that such correlation is the artificial product of environmental influences; that the child from a superior home does better because he has had more opportunity to pick up the information needed for success in the tests. A careful sifting of the data has forced upon us the conclusion that the greater part of the difference found is due to an actual average superiority in the endowment of better-class children." Yerkes and Anderson also found children of superior social and economic status to be superior in mental capacity. Terman finds a correlation of social status with the teachers' estimates of intelligence to be .55, and the correlation between the I. Q. and social status to be .43 for the younger children, .40 for those in the middle years and only .29 for the older. "In other words, the longer the supposed influence of home environment lasts, the more independent of it the I. Q. becomes." All of our facts point to the same conclusion, that the correlation of I. Q. with social status rests upon actual differences in endowment.

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3. PINTNER, RUDOLF and PATTERSON, D. G. A Performance scale for the measurement of intelligence. *Journal of Criminal Law*, May, 1916.
4. PINTNER, RUDOLF, Juvenile delinquents tested by the Binet scale. *Pedagogical Seminary*, XXI, 1914, 523-531.
5. STENQUIST, J. L., THORNDIKE, E. L., and TRABUE, M. R. The Intellectual status of children who are public charges. *Archives of Psychology* No. 33, Sept., 1915.
6. TERMAN, L. M. The Stanford revision of the Binet-Simon scale. *Journal of Educational Psychology*, Vol. VI, 1915, 551-562.
7. YERKES, ROBERT M. A Point scale for measuring mental ability.

REVIEWS AND CRITICISM.

The Development of intelligence in children (the Binet-Simon Scale). By Alfred Binet, Sc.D., and Th. Simon, M.D. Translated by Elizabeth S. Kite. Vineland, N. J.: The Training School, May, 1916. Pp. 337.

The Intelligence of the feeble-minded. By Alfred Binet, Sc.D., and Th. Simon, M.D. Translated by Elizabeth S. Kite. Vineland, N. J.: The Training School, June, 1916. Pp. 328. Illus.

Miss Kite has done a great service to the literature of clinical psychology by the performance of a task for which she was particularly well fitted. Not only does she hold a French diploma for primary instruction, awarded in 1905, but for many years she has been engaged in the application of the Binet-Simon scale in America. In these two volumes she has rendered into satisfactory English practically all that the authors of the famous scale have written on the subject of feeble-mindedness and its diagnosis. The first comprises five papers on intellectual level, published in *L'Année Psychologique* during the years from 1905 to 1911. The second includes three longer papers published likewise in *L'Année Psychologique*, in 1908 and 1909, on "The Intelligence of the feeble-minded," "The Language of the feeble-minded," and "Feeble-mindedness and dementia."

Dr. Henry Goddard contributes an introduction to each volume. In that of the second volume he says,—“Nowhere does Binet's genius show more brilliantly than in this work. That he in the midst of a busy life and in addition to all his other work could have acquired so great a knowledge of mental defectives is amazing; the more so when we realize that it was first-hand knowledge gained from observation backed by keen perception, that perception that enabled him to see the truth with a quickness that makes the rest of us, still groping in the dark, question if it was truth Binet saw.”

Many who have worked with the scale in this country have asked themselves this question; but far too many more have gone on applying the scale without any question whatever. As early as 1905, in his first significant paper, Binet observed, “The use of tests is today very common, and there are even contemporary authors who have made a specialty of organizing new tests according to theoretical views, but who have made no effort patiently to try them out in the schools. Theirs is an amusing occupation, comparable to a person's making a colonizing expedition into Algeria, advancing always only upon the map, without taking off his dressing gown.” Current journals are being filled with the accounts of such “expeditions into Algeria.” It would be well if all clinical psychologists and all teachers of defectives could read Binet's work in its entirety. Perhaps it would be Utopian to expect that all Binet testers should read it. But every one who does read the writings of Binet, whether in their original French, or in the faithful English of Miss Kite, cannot help but be impressed anew with the greatness of the man, his openness of mind, and the extreme care with which he proceeded to his conclusions.

The books are beautifully printed, and the few slips in English which are to be found in them are probably due to oversights in proof correcting. The Training School is to be congratulated on the production of these two volumes.

A. T.

The Control of hunger in health and disease. By Anton Julius Carlson. Chicago: University of Chicago Press, 1916. Pp. viii+319. Illus.

This volume presents "a summary of the work on the stomach, with special reference to hunger and appetite, carried out in the Hull Physiological Laboratory of the University of Chicago during the last four years," in the light of biological and clinical literature. "The elimination of many biological correctives by the artificialities of modern civilization calls for rational guidance of all phases of human behavior, including the desire for food," observes Mr. Carlson. "When hunger becomes pathologically exaggerated the physician of today knows no remedy; when it fails in disease, he dispenses the 'bitter herb' of tradition—and hopes for the best. . . . There is yet much work to be done on the problem of hunger control, work worth doing, co-operative work of the clinic and biological laboratory."

Mr. Carlson's investigation represents a very substantial attack upon the problem. During the last four years he "has been fortunate in having in his service a 'second Alexis St. Martin,' a man with complete closure of the esophagus and a permanent gastric fistula of twenty years' standing. The gastric fistula is large enough to permit direct inspection of the interior of the stomach, and the introduction of balloons, rubber tubes, and small electric lights for various investigations." Several dogs were also used for experimental purposes, and Mr. Carlson himself was the subject of an elaborate series of observations.

The work of other investigators in this field is very thoroughly reviewed and discussed. There is a bibliography of over thirteen pages, and a good index. The problem of hunger is a pressing and ever-recurring one. In these days of rising food prices it is an almost universal matter of thought. Mr. Carlson's book will be of intense interest to everyone who is professionally concerned with physiology, as well as to many who approach it as laymen.

A. T.

NEWS AND COMMENT.

Health Conditions of School Children too Serious to be Neglected.

The 1917 budget estimate of the Bureau of Child Hygiene of the Health Department of New York City calls for \$75,240 more than last year for school health work. The additional money is needed for enlarging the staff of medical inspectors and nurses, so as to reduce the present proportion in the number of children to physician and nurse to a better working basis. Six dental hygienists are also asked for who are to be engaged in prophylactic work and giving surface treatment, thereby adding considerably to the preventive as well as curative services at present available in the schools and clinics. The following table shows the present and proposed staffs:

	1916	1917	Increase
Medical Inspectors.....	100	125	25
School Nurses.....	200	252	52
Dental Hygienists.....	...	6	6

The 1915 reports on medical inspection show that out of over 925,000 pupils enrolled in the public and parochial schools, only 305,665 or 33 per cent were examined for physical defects, leaving a large percentage among the two-thirds of the enrolled children not examined possibly suffering from various physical defects, which in their very nature are a handicap to school progress. Of the children examined, 222,072 or 72.6 per cent had physical defects requiring treatment as follows: defective vision, 14.5 per cent; defective nasal breathing, 9.5 per cent; hypertrophied tonsils, 11.2 per cent; defective nutrition, 5.3 per cent; defective teeth, 63.9 per cent; and to a lesser extent there were cases of cardiac and pulmonary diseases, defective hearing and orthopedic defects.

The large number to be examined and the small staff of physicians available made it impossible at times to give each child a complete physical examination, with the result that 129,125 or 42.2 per cent of the children examined did not have their vision tested. The large percentage of untermiated cases under treatment or investigation proves the insufficiency of the staff employed for this vast and important task. As much of the curative work done by private physicians or at clinics is due largely to the follow up efforts of the school nurses, this phase of the health supervision cannot be conducted as effectively as desired unless an adequate staff of nurses is provided. Both these handicaps in the results of the year's work are due to the large number of pupils assigned to each physician and nurse, being respectively 9200 and 4800, whereas the ratio should never exceed 3000 in either case. The appointment of the additional physicians and nurses asked for will reduce but slightly this ratio:

	1916	1917
Pupils to physician.....	9200	7400
Pupils to nurse.....	4800	3666

Public safety demands the quick recognition and exclusion from school of all cases of infectious disease. The health and efficiency of each individual child demand the discovery of any physical defects which may have a deleterious effect, not only on his well-being but also on his educational progress. Without the proper number of physicians and nurses indicated above, neither of these important requisites can be observed. The welfare of the community as well as the interests of our educational and health systems are sufficient grounds on which to urge the granting of the increased appropriation asked by the Health Department.

Under the Education Law of the State of New York the employment of physicians to examine each public school child *each year* is made mandatory outside of New York City. Under the present system in New York City each child is examined but *once in three years* during its school life. The cities of Boston and Philadelphia, where social and economic conditions affecting school children are analogous to those in New York, are governed by the laws of the States of Massachusetts and Pennsylvania, respectively, which make annual examinations of school children mandatory. Similar statutory provisions are in force in the States of Maine, Minnesota, North Dakota, Rhode Island, Utah and West Virginia. If we cannot insure the annual examination of each child

attending school in New York City and the effective following up of each case found needing medical attention, the city should at least provide for the thorough examination and following up of a larger percentage of children than it is at present possible to reach.

The school nurse plays a highly important part in our school health supervision. Her duties are many and extend beyond the school building. The efforts of the medical inspectors would be of little avail without the following up of the cases by the nurses. Upon the school nurse devolves the highly important duty of examining the children for contagious diseases. This work consumes a great part of the nurse's time and is in its very nature an exacting procedure. Adding to this the follow up work with its many home visits, taking children to dispensaries for treatment, and the numerous cases requiring emergency treatment which turn up daily in every school, it will readily be seen that the present staff of nurses is insufficient and that the individual nurse is overtaxed.

The number of children cured of serious physical defects thus depends largely on the number of parents receiving the advice and aid of the school nurse. This activity is necessarily limited by reason of the small number of nurses assigned to this work, with the result that large numbers of cases are never reached, often with very serious consequences.

For the first time in the existence of the system of medical inspection in New York City, funds are requested for the employment of dental hygienists. The experience of Bridgeport, Connecticut, and other cities employing dental hygienists has demonstrated the great value of their services as well as the considerable economy affected thereby. Instruction in the care of the teeth, which at present is an added burden to the many other duties of the school nurses, and the cleaning of children's teeth, which is seldom done in the clinics, can be done expeditiously and satisfactorily by dental hygienists, especially trained in these branches of dental practice. The large percentage (63.9 per cent) of children with defective teeth in the public schools and also the fact that more than half of these children are probably too poor to patronize private dentists, offer the most convincing proofs of the need for such prophylactic treatment being made easily and continuously available to the children in our schools.

CHARLES C. BURLINGHAM, Chairman,
Bureau of Welfare of School Children.

Feeding New York's School Children.

In the May, 1916, number of *The Modern Hospital*, Miss Elizabeth M. Fee, supervisor of the New York School Lunch Committee, published a very interesting report upon the progress of the work in 1915-16. "The failure to provide a nourishing noonday meal for children," she is convinced, "accounts in part for the large percentage of malnutrition cases found by the medical inspectors in the schools. During the past year 16,181 cases of malnutrition were reported in the schools of New York City. In 1909, when the system of medical inspection was newly organized, and the first general physical examination of the children in the schools was in progress, the report that 7,249 children out of 231,081 examined were found to be malnourished startled the

public and caused the press to engage in a discussion of the social and economic conditions which cause so many children to suffer from poor nourishment.

"As a result of this disclosure, the New York School Lunch Committee was organized under the leadership of Miss Mabel H. Kittredge, who is still active in that capacity. The work of this committee found favor with the public, and won the approval of the school authorities. The popularity of the school lunch grew so rapidly that a large number of schools which were not so equipped requested the installation of lunch services. Eventually the committee became affiliated with the New York Association for Improving the Condition of the Poor, as a part of the Department of Social Welfare. Thus greater resources and facilities came within the control of the committee and its activities were greatly increased, being at present more than six times as extensive as they were when the committee originally took up the work.

"Last year the committee operated lunch services in 19 public schools, with an aggregate enrollment of almost 27,000 pupils. A total of 1,488,527 portions of food were sold to the children, the returns for which amounted to \$14,885.27. This sum of money repaid the cost of the food, the committee bearing a deficit for the cost of service.

"The equipment of kitchens and the various accessories are provided in part by the Board of Education. The Board of Estimate and Apportionment has voted a special bond issue of \$26,000 for the equipment of school kitchens and lunch rooms. This will enable the committee to extend its service to about 60 schools. . . .

"The daily menus in the schools vary, and the children are offered a large choice of desserts, in addition to the soup and the other staples, such as sandwiches and salads. Attention is also given to the preferences of children of different nationalities. In the Italian section Italian cooks are in charge of the school kitchens, and foods familiar to this nationality are served. In the Jewish sections Jewish cooks are employed who are familiar with the dietary regulations of the orthodox law. . . .

"In many families the mothers are working either in factories or doing piece work at home, and consequently have no time to spare in preparation of lunches. If the children had not the advantage of a hot, nourishing luncheon in school, they would have to go through the entire day on merely a cup of coffee with dry bread, or several dill pickles.

"The work of the School Lunch Committee is not in the nature of charity relief. The aim is to provide nourishing food to the children of the poor as well as those in comfortable circumstances at cost. Nevertheless, the lunch service has afforded opportunity to reach into the homes of indigent families who were not recipients of charity and yet deserved such assistance as it was possible to secure for them."

The Indian no longer a Vanishing Race.

At the Mohonk Conference at Mohonk Lake, New York, October 18, 1916, an address was delivered by Dr. Lawrence W. White, Superintendent Lac du Flambeau (Wis.) Indian School, in which he said in part: Three years ago everyone had accepted the apparent fact that the Indian had passed into a state of decadence and the death of the race was imminent, when the present Commis-

sioner of Indian Affairs, Mr. Cato Sells, faced the condition squarely and said, "To discover such a condition and not correct it were criminal. . . . We cannot solve the Indian problem without Indians. We cannot educate their children unless they are kept alive."

In compliance with the policy outlined by the Commissioner, superintendents began more thoroughly to acquaint themselves with the home conditions of the Indians on their reservations, with the object in view of eliminating, as far as possible, everything that retarded the improvement of health conditions. Physicians were started on systematic sanitary inspections. Appreciating the value of good teeth in relation to good health, an effort was made to provide dental facilities for the Indians through a corps of travelling dentists. The demands upon their services are so great that no doubt remains with respect to the appreciation of the Indians for this form of treatment. As funds permit, it is hoped to increase this service more adequately to meet the demands upon it. The trained nurse was called upon to care for the sick. The field matron, the farmer, the teacher, in fact every field employee was soon enlisted in a campaign to restore the constitution, to regain the health, to save a race that had by competent persons been proclaimed to be dying. Baby Shows have become a part of every Indian fair, Baby Weeks and Child Welfare Exhibits have been carried out on nearly every reservation in the Indian country. Mothers' Meetings have been instituted, Little Mothers' Leagues formed, and other educational features have been made a part of this campaign with the idea of teaching the Indian mothers the proper way of caring for their children.

In 1912 the medical force of the Indian Service consisted of:

1 Medical Supervisor,	1 Assistant Physician,
2 Ophthalmologists,	89 Agency Physicians,
1 Physician Expert,	53 Contract Physicians.

This force has been increased until now it consists of:

3 Medical Supervisors,	76 Contract Physicians,
7 Ophthalmologists,	7 Field Dentists,
130 Agency Physicians,	6 Field Nurses.

In addition there are also substantial increases in the number of hospital nurses, field matrons and miscellaneous hospital employees.

The general health appropriation for relieving distress and prevention of diseases among Indians to be requested for the year 1918 will be \$400,000. The amount used for this purpose has been multiplied by ten during the last eight years, the larger part of the multiplication having occurred in the past three years, and the results obtained have more than justified the expenditure.

Attention was called to vital statistics for 1916 which have been collected by states and are accurate, but exclude the Five Civilized Tribes and certain unattached Indians of California, data upon which is not at present available:

Total Indian Population.....	209,224
Total births.....	6,092
Total deaths.....	4,570
Excess of births over deaths.....	1,522

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CONGENITAL APHASIA AND FEEBLEMINDEDNESS—A CLINICAL DIAGNOSIS.¹

BY LIGHTNER WITMER, PH.D.,
University of Pennsylvania.

As he appeared before the class, Arthur was a well-nourished boy of nearly eleven, good looking, neatly dressed, and respectful in manner. He sat quietly at the table while doing the formboard and cylinder tests. He used his right hand only, keeping the left under the table. As the demonstration proceeded, his gentleness and stillness became more marked. He was apparently a sturdy boy, not particularly shy, and not awkward. Yet his behavior during the hour made an impression of unusual quietness for a healthy boy. It was something like the behavior of an animal who has been severely frightened, and who had acquired the habit of going softly to escape notice. His record confirmed this impression by a history of brutal treatment when a little child. This afternoon he quite evidently found nothing to be afraid of. From time to time he smiled up at Dr. Witmer, and co-operated willingly. There was nothing to suggest an eye defect. Hearing as well as vision was apparently normal.

Today his best time on the Witmer formboard was 15 seconds. When first examined at the Clinic a few days before, his best record was 20 seconds. Then he did the Witmer cylinders in 52 seconds. Today he did them in 45 seconds, and again in 49 seconds. He did this kind of work very well, using trial and error method to some extent, but performing the test mainly by the exercise of a high degree of distributed attention and space perception. He noticed instantly if a cylinder was too long or too short for its socket, taking it out and putting it in the right place, which he found quickly by looking for it. As far as concerns this kind of test, he "looks" very efficiently.

Dr. Witmer asked him to write his name on the blackboard, and his age. Arthur wrote his name and the number 10.

Q. Ten? Ten what? Arthur made no answer.

Q. When I ask you how old you are, what do you answer? A. Ten years old.

Q. You write *years* then. Do you know how to write it? Do you know what begins it? Now I will tell you how to spell it, but don't put anything down there until I finish. You spell it, y-e-a-r-s, write that.

After some hesitation Arthur wrote y, then stopped. Dr. Witmer had him come to the further edge of the blackboard and write the letters s, r, a, and e,

¹A clinical lecture delivered to undergraduates in Psychology 2C on March 23, 1916, and reported by A. Travis, Recorder of the Psychological Clinic. The boy's name is fictitious.

one under another. Arthur wrote them correctly; then Dr. Witmer rubbed them out.

Q. Now what was the word you were to write on the board? A. Years.

Q. And I told you it began with a y, and you put the word on the board. Now put down the rest of the word *years*.

Arthur hesitatingly added an s to the y, and stopped again.

Q. What's the second letter you have got there? S? All right, y-s. Do you know any word that you spell y-s? Don't know any such word? Then why did you put that down? Can you guess how the word *years* is spelled,—years, ten years (pronouncing it very slowly with the full sound of each letter). Can you guess how that is spelled? Can't guess at all? Now I'll tell you once more how it is spelled? You rub out what you have down there. That word is spelled y-e-a-r-s, years.

Arthur wrote *ye*, and stopped again.

Q. Y-e, now what was the next letter that I told you? Arthur could not tell.

To the class Dr. Witmer said,—Now observe that that word has five letters in it. He knows how to make each one of the five letters, so that it isn't that he doesn't know the letter and can't write it down; but if you give him five letters in succession, he is not able to repeat them in the same order. That is a memory span test, and my demonstration today has the object of showing you the importance of the memory span. The memory span is fundamental in school work. Now we will see if we can find out something about Arthur's memory span.

Q. Do you know how to spell the word *cat*? All right, put that down.

Arthur wrote it on the board, and also the word *dog* from dictation.

Q. Right, can you spell horse?

He wrote *ho*, and then paused.

Q. All right, you can't spell that, very good. Can you spell *desk*?

Again Arthur wrote the first two letters of the word, and paused.

Q. Can you spell *girl*? Try *girl*, write it down.

Arthur wrote *gar*, and stopped. While writing he fumbled with his left hand toward the eraser and loose pieces of chalk at the bottom of the blackboard, a clear betrayal of his state of uncertainty.

Q. Can you spell *cow*? Right. Can you spell *boy*?

He wrote *bog*, rubbed it out, wrote *b*, and then stopped.

Q. That's very good. Now I'm going to tell you the spellings of some words. *Boy* is b-o-y, write it down.

Arthur wrote *bay*.

Q. What have you put on the board? Did you put b-o-y on the board? You have got b-a-y. I want b-o-y. Right. Now write g-i-r-l.

Arthur innocently wrote *goil*, to the uproarious amusement of the class, and looked around in wonder to see what they were all laughing about.

Q. Do you remember the spelling I gave you? I will spell it again for you, g-i-r-l.

This time he wrote *giol*.

Q. What did I say? Girl? I know, but how did I spell it? You write *girl*. At last Arthur got it right.

Q. That's good. Now you can write *desk*. You write it. Let me see you write *desk*. Write on the board d-e-s-k. That's right. Can you write the word *horse*? Can't do that, can you? Know how to spell that? Now you write on the board what I tell you, h-o-r-s-e.

Arthur wrote *hose*, omitting the *r*.

Q. What's that word, spell it, h-o-s-e? What does h-o-s-e spell? What was the word that I spelled for you a short time ago, the whole word? A. Deak.

Q. Deak was one word, but what was the word you were trying to put on the board now? A. Horse.

Q. Yes, that was the word, *horse*. Know what a horse is? A. Animal.

Q. Animal, yes. Seen one today? What color was it? A. Brown.

Q. Now *horse* is spelled h-o-r-s-e. Try it again.

Arthur got it right on the second attempt.

Q. Can you spell *teacher*? We'll try a shorter one, *crowd*. Do you know what crowd means? What does it mean, "the place is crowded"?

A. Can't get no more in.

Q. That's right, we are just laughing because you have got it right. Now you spell the word *crowd*, c-r-o-w-d. Go ahead, put that down.

Arthur wrote *crowd*, omitting the r, as he had done in *horse*.

Q. Now let's try some easy words. Put *beg* on the board.

He wrote *deg*, but when asked what he had written, repeated *beg*.

Q. Yes, what have you put down there? Is that b, the first letter? That's a d. Write *cart*. That's right. Write *thank*.

Arthur wrote th, stopped and stood looking up at it. As usual he had written as far up on the board as he could possibly reach.

Q. Now listen again, *thank*. What have you? You have t-h-e-n-k. What did I tell you to write? Is that what I told you to write?

Arthur thought it was, and Dr. Witmer did not press him further.

Q. Put down a few numbers for me. Put down 1, 2, 3. Right. Put down 9, 5, 8. Right.

Arthur wrote the numbers as he did the separate letters, one below another in a vertical column. For 7, 3, 9, 2, he wrote 7932; for 8, 4, 6, 1, he wrote 8642. Series of three numbers, as 9, 4, 2, and 8, 5, 7, he wrote correctly. For 7, 4, 8, 3, he wrote 7432.

Turning again to the class Dr. Witmer continued,—Now you see here a very limited memory span, and you get the distinction between intelligence and certain other qualities which are necessary for intellectual development. I haven't been able to produce any evidence this afternoon that this boy has a memory span of more than three. He has a memory span which seems adequate for three, but not for four digits or letters. Now the first time he did the Healy completion test, he put all the blocks in the right places. That is a test of imagination, a test to show what sort of images he has, what ideas he has. In the same way I gave him a completion test when I asked him what *horse* meant, and he answered all right. The test here is mainly in the reasons that are given, first the correctness and then the reasons. He gave good answers for all his placements, and that is a test which is sometimes not satisfactorily performed by twelve-year-old children.

Handing Arthur a second grade reader, Dr. Witmer said,—There, can you read this? Arthur spelled out the word *who*, and read the next two words without spelling, "Who is it,—" and paused to rub his eye. As his eyes are all right, this was evidently a ruse to gain time.

Q. What's the next word? Spell it. A. C-o-m-e-s.

Q. What does that spell? C-o-m-e-s, that spells *comes*. "Who is it comes," what is the next word? A. W-i-t-h.

Q. What does that spell? With, "who is it comes with his,"—?

A. R-e-i-n (then he stopped).

Q. What's the rest of the word? A. D-e-e-r.

Q. What's that? Reindeer. Who does come with his reindeer?

A. Santa Claus.

Q. Santa Claus, yes. What's the next word, spell it.

By dint of spelling and prompting, Arthur was pulled through the first sentence, "Who is it comes with his reindeer over the ice and snow, with a sleigh just full of good things?" After reading the next sentence, a very short one,— "Tell me if you know," he was asked to repeat the first sentence, but had to be prompted on three words, omitted one entirely, and miscalled two or three others.

Dr. Witmer commented,—There you get an idea of his retentiveness.

Q. How much are 2 and 2? A. Four.

Q. How much are 3 and 4? A. Eight.

Q. How much are 5 and 6? A. Eleven.

Q. How much are 3 and 4? A. Seven.

Q. How much are twice 11, 2 times 11? A. Twenty-three.

Q. How much are 3 times 5. A. Fifteen.

Q. How much are 3 times 7? A. (After a long pause) twenty-one.

Q. Do you go to school? A. Yes.

Q. What grade are you in? A. Second grade A.

Q. What day of the week is this? A. Tuesday. (It happened to be Thursday.)

Q. What day was yesterday? A. Monday.

Q. And the day before? A. Sunday.

Q. What day will tomorrow be? A. Wednesday.

Q. And the day after that? A. Thursday.

Q. What day do you think tomorrow will be? A. Wednesday.

Q. Tomorrow you think will be Wednesday. What day in the week do you have no school? A. Sunday and Saturday.

Q. Did you go to school yesterday? A. Yes.

Q. Did you go the day before that? A. No.

Q. You didn't go then? Now you see, if you say it, stick to it. Would you be surprised if I told you it was Thursday? Would you? (Arthur shook his head.)

Q. You wouldn't be surprised. Would you believe me if I told you it was Thursday? (Again Arthur shook his head, while the class laughed.) You wouldn't? What day do you think this is? A. Tuesday.

Q. Would you believe it was Thursday if all these people in the room said it? (Arthur shook his head with a sweet but firm determination.) You wouldn't? There you see, we are all in the same class.

Arthur was now released from further examination, and returned Dr. Witmer's "good-bye" with a pleasant smile. Proceeding with his lecture, Dr. Witmer said:

I want to give you some facts. This boy, Arthur, is ten years and eight months old, nearly eleven years old. He told you he was in the second grade A, which is the first half of the second grade. Consequently he is backward in school progress. That is what we would call true backwardness, pedagogical backwardness. It is retardation on the education scale. He is nearly eleven years old. He ought to be at least in the fourth grade, so that he shows at least two and perhaps we ought to say three years of backwardness. Now

the question is, has he just gone to school? He might be a foreigner, just imported from the other side. Our record shows that he was five terms in the first grade, and this is his third term in the second grade. He has been going to school eight terms, that is four years, and this will be the end of his fourth year. He ought to be in the fourth grade B, if he had been promoted each year. Instead of that, he is only in the second grade. Here is a record of very considerable backwardness.

Now I have told you there are certain scales¹ upon which we rate performances. There are the growth scales, first of all, and there are the culture scales. For the growth scales we have species and age. You have observed this boy physically. He appears like a normal ten or eleven-year-old boy. There is no physical retardation observable in his structure. We observe in his behavior here, the way he handles these mechanical tests, no physiological retardation, he has good control over his muscles, and so on. There is no reason, therefore, to think that on the age scale he is backward. On the species scale, so far as his appearance and behavior go, there is nothing out of the way. He is a well-behaved boy. There is nothing unusual about him, excepting this inability to learn, so that on the species scale we would consider him just an ordinary normal boy.

To get where he belongs on the age scale mentally, his mental age, we make certain examinations here. One interesting question is,—is this backwardness? He is now in the second A, but this may be due to the fact that he hasn't been properly taught. He has been four years in a Philadelphia public school, but we must not assume that he has been properly taught. Has it been his fault, or the fault of the teachers he has had, that he has been able to spend several years in those grades? We tried him here in reading, spelling, and a little arithmetic. You got enough evidence, you saw enough of his performance, to make up your mind that there is something the matter with the boy. We can tentatively eliminate poor teaching, and say there is something the matter with this boy, and address ourselves to the question, what is the matter? We can ask ourselves where he is in his school age. Certainly, so far as school progress is concerned, he has done only the work of the first grade. You can see he isn't fit to be advanced to the second half of the second school year. In very nearly four years he has succeeded in getting ahead not more than one year. He is doing work which many six-year-old children are doing better than he can do it today. As far as our

¹ Witmer, Lightner. On the Relation of Intelligence to Efficiency. *THE PSYCHOLOGICAL CLINIC*, Vol. IX, No. 3, May, 1915.

record went here, in his proficiency in school subjects he is about like a six-year-old child, that is, he has four years of retardation.

There is a set of tests called the Binet-Simon tests, a series presumably adapted for different ages. There is some difference of opinion as to whether they are satisfactory or not. We employ them to supplement our other examinations. When we gave this boy the Binet tests, his age came out as 8.4, so that the Binet tests show him to be retarded in mental age about two years. My examination here today would seem to indicate that he is more retarded than that. I would say that his mental age is certainly not more than 7.5 as shown by these tests.

Of culture scales I have said there are two,—the civilization scale and the education scale. He is well enough dressed, he goes to public school, his people are in moderate circumstances. We would say that on the civilization scale he is normal,—nothing to note about that, he is not some young savage. On the education scale he is retarded three years.

Now we have another set of scales that I would call proficiency scales. One is the amount of proficiency, and the other is the number of operations in which he may be proficient. What ought a ten-year-old boy be able to do? Among other things he ought to know his multiplication tables entire. This boy certainly does not know beyond the four-times part of the table, and I don't believe he knows the two-times satisfactorily. There is a great limitation in the number of operations which this boy can do at ten years old, and his proficiency in the things he can do is very small. We can say that his proficiency, for a ten-year-old boy, is small, and there is a great limitation in the number of operations, compared with what a ten-year-old boy should do,—spelling, reading,—he doesn't know how to read. A boy of ten ought to be reading for his own personal profit. This boy can't even read a sentence like, "Who is it?" He says, "Who," then he looks at the next word and says, "is," and then looks at the next word and says "it!" with a rush like a person hauling himself up by the arms for the last time. In the strict sense of the word he can't read, and that is an operation to be expected of a ten-year-old boy. He is very deficient in all the school branches. But on the formboard and cylinder test he has all the necessary operations and he does them as well as I have seen some college students do them.

He can write, but his proficiency is small. He can write separate letters. He is supposed to have acquired the operation of addition up to 99, but I am confident his proficiency there is limited. As you saw, he said 3 and 4 equals 8, and the next time, equals 7. That is

what I meant when I said his proficiency is small and his range of proficiencies is limited.

What does the calendar test show, when I asked him the days of the week? Stubbornness? Not exactly. My recollection is that of the days of the week, Thursday is this boy's special difficulty, and his mother told me that he never seems to know Thursday. He knows the other days pretty well, but has never been able to remember the word Thursday and hold it in mind. This happens to be Thursday, so he took the next easiest word. I tried him on that to see if it would turn out as they told me, and my interpretation of it is that it is a memory defect.

Now let us come to the question of the interpretation of all this. What is wrong with this boy? He is a very interesting case for us, because his deficiency is in the psychological field. It is something the matter with his memory, isn't it? Under memory I gave you two things; one was trainability, and the other was retentiveness. Those are the two things we want to know about memory,—how trainable is it, and how retentive is it? But memory uses material. If he is going to remember that *crowd* is spelled c-r-o-w-d, he has got to remember it with certain memory material, certain images. Memory is based upon imagination. Under imagination we take imageability, the ability to form images and the association of these images together, or I call it associability, and finally the complexity. Under imageability, did you see any evidence for the opinion that his images were defective? Not much. You might possibly consider there is a little evidence in the fact that when I spelled b-e-g he wrote d-e-g, and when I asked him what he had there, he started off with the *b* and then he saw he had a *d* there. There was a confusion of the *b* and the *d* simply, which might point to faulty images, that he hadn't the right kind of image of the *b*. There were a few instances of that kind which seemed to me to suggest that his images were not good, but in the main there were good, and I took this completion test to show that he did have images. I asked him about the horse, and so on. His images are good enough for spelling and reading, but he is not making as good use of them as he might. Now why? We come across in this boy what seems to me to be the real difficulty, and that is the images do not associate themselves together in his mind. There is deficient associability or deficient memory span. If a boy is going to say, twice two are four, five times six are thirty, and learn his multiplication tables, each one of these sentences which he has to repeat and fix in his mind involves the memory span, the association of images. Now if every one of the image complexes in a table

of that kind is beyond the associability point in his memory span of three or at the most four, he can't possibly get it.

We got very good evidence here this afternoon of the difficulty that anybody would have in trying to teach him to spell anything more than a three-element word. If you start him in on five or six elements, I don't think he ever would learn in that way. He has got to be taken in hand on the assumption that his associations are limited to three, that his memory span is limited to three. One of our graduate students made a more elaborate examination of him, but saw no evidence of the deficiency of association for ordinary objects about the room, or ordinary ideas outside of school subjects, except in some of the ideas that were presented in the sentences given him. He didn't seem to be able to get the complexes there very well, but the ordinary associability was good. He hasn't got the image complexity that a boy of his age should have. The general indications are that his deficiencies in associability and memory are rather limited to language.

Memory is a specific form of imagination. Memory means that the images which are associated together form complexes. If you are to spell the word *complexity*, that in itself is an image complex. How many times does that have to be repeated until you know how to spell the word? That will give you some clue as to how trainable your memory is. How long after you have acquired the spelling of a word will it be retained? We tested this boy on school subjects, but his memory was not retentive. He had extremely poor retentiveness. He did not have a high degree of trainability, and there was fundamentally lacking the power of associating images, which probably was the chief difficulty, so that we would say that his difficulty is in the field of memory.

The next question is, is it general? Does it cover the whole field of memory? We asked him, what day is this? He said Tuesday. But when we asked him questions about the other days of the week, he seemed to have a good memory for that. He seems to have good sense when you ask him ordinary questions. His understanding is good. He understood these tests right away. His power of attention is good. It would appear, therefore, that it was limited entirely to the field of memory for language and number, the two important branches of school work. But you understand that the number work is based upon language, so it may be in his case a specific defect of language memory.

This is what we would then say about this boy: His general difficulty, that which is fundamental, is a deficient associability, a deficient memory span. His specific defect is a deficient memory.

He has not formed the proper idea complexes which he should have for a boy of his age, and it would appear that the defect is limited to language and number. We can translate this if we please into technical terms, for instance, a lack of memory or a deficient memory is *amnesia*, that is the alpha-primitive and the Greek word meaning memory, lack of memory. The lack of memory applies chiefly to language, so we may call it *amnesia verbalis*, lack of verbal memory. For a ten-year-old boy he is lacking in verbal memory. Your memories today are dependent upon two factors. One is the amount of training which your memory has received, that is the acquired part of the process. The other is your congenital capacity for forming these memory complexes. There can be no doubt that you all differ congenitally in memory capacity. You have all differed somewhat in the amounts of acquisition which you have retained. We take this boy and try to study him as he stands before us, nearly eleven years old, and he certainly hasn't acquired language memories. Is that due to his not having had adequate schooling? No, he has been four years in school. Is it due to the fact that he didn't receive adequate training in school? No, his memory span is deficient. We have got evidence here today that this boy has a congenital verbal amnesia, a defect of memory which is something inherent in his brain. Just as one boy hasn't got an ear for music, because he hasn't got the kind of brain which stores up musical tones, so this boy hasn't got the kind of brain which stores up memories of words and letters and sentences that are spoken to him. In his case it is probably a congenital verbal amnesia.

We are finding that these conditions exist in some children. Take this boy for instance. The principal of the school writes to me "We consider him very slow mentally, but not feeble-minded." He doesn't make the impression upon the principal of being feeble-minded. He doesn't make the impression here today of being feeble-minded. He does the mechanical tests correctly. But so far as his standing goes, he is in the feeble-minded class, and probably as he grows older and falls further and further behind, he will probably be diagnosed as feeble-minded, not socially competent to get on with others of the same age. At present he hasn't got mind enough to get on with second grade pupils, and if we are very strict in our diagnosis, I think we would have to call him feeble-minded.

Some are beginning to recognize a condition in children that they call congenital illiteracy. I would say that one line of separation among people in civilized communities is between literacy and illiteracy, and the literate are all above those about able to do fifth grade work. They acquire reading, writing, and arithmetic so that they

have it as a clumsy tool. They read newspapers, the sporting columns anyway,—and they read the signs. Perhaps before they die they cease to be literate, but they do acquire reading and writing. Those who do not acquire reading and writing as a tool, are the illiterate. Are there any children born, who are illiterate in the sense that no matter how hard you try, you can't teach them reading, writing, and arithmetic? Are there children born whom you can't teach to sing a tune? If so they would have amnesia musicalis, or amusia, a term applying to those who are tone-deaf and can't learn to sing. These others we can speak of as congenital illiterates, and since it has to do with language we may call it congenital aphasia. I would say this boy is probably not really feeble-minded, but it looks as though he had congenital aphasia.

He seemed to understand spoken words pretty well, so that the aphasia would seem to be very largely visual, although I think there was some auditory and motor aphasia too. When it is limited to the reading of words, we call it alexia, that is inability to read. I run across college students, in their papers, who must have a little congenital alexia. For instance, there is a part of the brain which you may have studied, the medulla oblongata, and I have had students taking this course write down "meddling obligato." I have also found students who after taking a year of psychology, maybe two, don't know how to spell psychology, at least not in combinations like "physiological psychology." They just fall down in a heap like that boy when he tried to spell *girl*.

The whole question, when you see deficiency of language memory, is this,—does it mean that this person didn't get an education, or that he couldn't get an education? I assume that this boy is where he is at the present time because he couldn't get an education. He is not a typical case of feeble-mindedness, because he seems to have not many defects but only a few very specialized defects, and we call his chief defect one of memory in the field of language. Inasmuch as we assume that that was with him from the beginning and has not been acquired as a result of defective education, we say that this boy's chief defect is a congenital aphasia, and it probably means that he is in the class of illiterates.

We saw a couple of years ago an extremely able mechanic, doing very high grade work, who didn't know how to write. He had gone to school and had never learned to write. He came to us to learn why it was he had not learned to write, although he had tried to do it. Apparently he had congenital aphasia, or congenital alexia. When he asked us that question we had to explain to him, "You are in the

position of the person who has no ear for music, who can't learn to sing."

My recommendation is that this boy be placed in a special class. He ought to be taken very well in hand. For example, I do think that in the educational backwardness of this boy, one factor is a faulty educational method. You can't teach a child who has any sort of defective memory, by the word method. You might just as well give it up. In my opinion, all of these cases have to be taught to read by the A, B, C method,—beat it into their heads. Give them a good deal of sound analysis. Start him anew, and quit trying to teach him by the word method. For children who are somewhat deficient, I find that the word method throws them into confusion for several years. I think this boy can be taught some reading and writing.

If you are interested in this, you will find in *THE PSYCHOLOGICAL CLINIC* for December, 1913, my report of a boy who was taught for a couple of years and finally learned to read. I don't think that this boy we have seen today will ever get over his defect, but if he can get over it enough to get out of the feeble-minded class, I don't know. He ought to be tried as though he were a normal child and were somewhat difficult to teach. He has got to be taken in hand exactly as we would take in hand a person who is said to have no ear for music. Such a boy can be trained to sing so other people could stand hearing him sing, but he couldn't earn much of a living by it. I think this boy could be trained that much in school subjects, and it looks as if he should be trained to a trade.

This is only the second time we have seen him. To make sure of all the parts of the analytic diagnosis we would have to teach him and keep him under observation for a couple of months.

A DISCUSSION OF THE INDEX OF FORMBOARD ABILITY.

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The Seguin Formboard has an interesting history as a mental test. It is now used in routine examinations by most clinical psychologists. There seems to be no disagreement among the many who have used it as to its excellence in differentiating the abilities of the subjects tested. In all the work that has been done, however, no definite index of formboard ability has been proposed which meets with universal acceptance. Time is recognized as the most important feature of the quantitative record. Three trials are usually given and the index is taken to be either the time record of the first trial, or the shortest of three trials or the average of three trials. No other indices seem to have been used by any workers although the third might have some theoretical arguments in its favor. In this article the various methods are subjected to certain quantitative treatment which we believe will reveal the relative values of the different methods.

Norsworthy¹ seems to have been the first to use the test. It was called the Block Test and was given to feeble-minded and normal children. A first trial was given and a second followed after a considerable interval. Time was noted in seconds. There does not seem to have been any attempt to get a single index of ability and the results, therefore, were presented for the first and second trials separately. The question as to which of these trials is the more reliable was not raised.

The formboard was given to 271 normal children and 420 feeble-minded children by Goddard.² In this work he used the best of the first three trials as the index of formboard ability and presented age norms of the two sets of subjects tested. Among other mental tests the Goddard formboard was used by Wallin³ in testing epileptics.

¹ Norsworthy, N. Psychology of mentally deficient children. Columbia Contributions to Philosophy and Psychology, 1906. Pp. 111.

² Goddard, H. H. The Formboard as a measure of intellectual development in children. *The Training School Bulletin*, Vol. IX, June, 1912. Pp. 4.

³ Wallin, J. E. W. Experimental studies of mental defectives. Educational Psychology Monographs No. 7. Baltimore: Warwick & York, 1912. Pp. 155.

On page 62 Wallin states that each subject was given three trials, and then on page 63 he says, "Tests were repeated during the second and third sittings for many subjects, so that frequently the figures utilized are the best single records in from six to nine trials." On page 74 he varies the index again,—“The averages are based on the best records in three trials (infrequently only two trials).” Although it is difficult to know just what Wallin's results on the formboard mean it is clear that he favors the use of the shortest trial record. Here as with the case of Goddard's results no principle seems to have been followed in deciding that the shortest trial record is the proper index.

Ten trials were given by Jones¹ in applying the test to fifteen children selected at random from the fourth grades of a city school system. He gives the results for both time and errors for each subject for each trial. He also gives the mean or average time for each subject for the ten trials. In this we have the average of a number of trials presented as a possible single index of ability, although Jones does not say whether or not this is the best index of ability.

Sylvester² seems to be the only worker who has attempted to solve experimentally the question as to which index is the most reliable. He decided to use the best time record of the second and third trials as the index of a child's formboard ability.

Whipple in his Manual³ decides in favor of the first trial time record when he says, "Unless it is evident that there has been some disturbing factor that should have been eliminated, S's quantitative performance in the first trial may be taken as the measure of his normal unpracticed performance." This evidently means that the first trial reveals the child's innate ability to better advantage than do the other possible indices.

The formboard test was given to over 1000 subjects by the Bureau of Analysis, New York State Board of Charities.⁴ Hall, after a short discussion of the possible indices, decides in favor of the best time record in three trials.

The writers⁵ in comparing the formboard ability of deaf and hearing children gave the average time and error results for the first three trials and for the average of three trials. In that paper the

¹ Jones, E. E. Individual differences in school children. *THE PSYCHOLOGICAL CLINIC*, Vol. VI, 1912. Pp. 241-251.

² Sylvester, R. H. The Formboard test. *Psychological Monographs*. Vol. XV, 1912. No. 65. Pp. 56.

³ Whipple, G. M. *Manual of mental and physical tests*. Baltimore: Warwick & York, 1914. Vol. I. Test 25 B, pp. 297-306.

⁴ State Board of Charities, Bureau of Analysis and Investigation. *Eleven Mental Tests Standardized*. *Eugenics and Social Welfare Bulletin*, No. V, 1915. Pp. 18-25. Results presented under the direction of Dr. Gertrude E. Hall.

⁵ Piattner, R., and Paterson, D. G. The Formboard ability of young deaf and hearing children. *THE PSYCHOLOGICAL CLINIC*. Vol. IX, No. 3, 1916, pp. 234-237.

main comparison was made by using the average time of three trials although no reason was advanced which would justify the use of the average as the most reliable index.

Wallin's¹ most recent work with the formboard advances some arguments, based upon experimental results, in favor of the shortest of three trials. He states, (p. 24) "Properly to gauge psycho-motor capacity by the formboard it is advisable to give the test at least three times; first, because the average score improves from test to test; and, second, because the effect of repetition varies somewhat according to the intelligence, type, age, and sex of the subjects. Girls make a poorer initial attack than boys and, therefore, gain relatively more from repetition. Intelligent and more mature children make a better initial adjustment than less intelligent and younger children, and, therefore, improve less from repetition; and epileptics very frequently do poorer in the second or third trials than in the first. For these and other reasons the fairest single index by which to gauge the psycho-motor efficiency of an individual by this formboard is the best record in the three trials." It is not at all clear that the reasons Wallin puts forward are those which really favor the shortest trial. The arguments seem, rather, to apply against the use of the first trial or against the use of any one trial as the single index. To the writers the arguments seem to favor the use of the average of three trials, in this way eliminating idiosyncrasies of various types of subjects in responding to particular trials of the test.

Young² in his standardization of a new modification of the formboard accepts as established Sylvester's conclusion that the shortest of three trials is the most reliable single index of the subject's formboard ability. He therefore presents his standard age norms in terms of the shortest of three trials.

To recapitulate, we find that of nine different workers two favor the use of the first trial record, two the average of three trials and five the shortest of three trials. This is not very significant, however, as workers in this field as in other fields tend to follow the beaten track and because the first important study (Goddard, 1912) adopted the shortest of three trials as the index, we find later workers doing likewise.

Sylvester's³ work devotes considerable attention to the problem of the determination of the most reliable index of formboard ability. He compares the distribution of the time records of the first trial, the

¹ Wallin, J. E. W. Age norms of psycho-motor capacity. *Journal of Educational Psychology*, Vol. VII, No. 1, Jan. 1916, pp. 17-26.

² Young, H. H. The Witmer formboard. *THE PSYCHOLOGICAL CLINIC*, Vol. X, No. 4, June, 1916, pp. 92-112.

³ Sylvester, R. H. *Op. cit.*, pp. 26-34.

third trial, the shortest trial, and the average of three trials. The following criterion is then proposed for the determination of the index, "That standard which gives the lowest and most regular variability is probably the best." The shortest of three trials is chosen as fulfilling this condition although the average of three trials shows a very smooth curve. In a thorough mental examination of individual children he found that, "in many cases the shortest trial index was found to be unsatisfactory and in some cases it was quite misleading." On the contrary Sylvester after subjecting the average of three trials to the same kind of correlation with the results of thorough mental examinations, says, (p. 33) "Without doubt, the average of three trials is a more reliable index to the mentality of a child than is any other single numerical index." In spite of this conclusion, however, he returns to the shortest trial record of the second and third trials.

It does not seem to the writers after a review of the efforts to solve this question that the last word has been said. Theoretically the shortest time record is open to serious criticism. It is coming to be a recognized principle of differential psychology that no one test is a true measure of ability, that in fact we need a variety of tests for such measurement. This is true for two reasons, first to allow of a balancing or compensating of the many specific abilities possessed by the individual, and secondly to reduce to a minimum the influence of large fluctuations of attention due to especially facilitating or inhibiting factors operative in the course of the experiment. To take the shortest time record is to violate this latter principle. Further, we cannot see why a reduction in the variability of the distributed results from age to age should be the criterion of the proper index. So far as we are aware it rests upon no definite principle. The reverse might be held with as much justification in logic. Thus we might argue that that measure which gives the greatest variability in the distributed results is the best measure because it is making finer differentiations among those tested.

From the consideration of the principle of eliminating the influence of chance fluctuations of attention, above referred to, we might conclude that the average of three trials is the best index of a child's formboard ability. It measures the child's average ability without giving undue weight to extreme fluctuations of attention and possibly other accidental factors which might be operative to produce one exceptionally short trial.

The first trial record seems to us to be especially significant. It falls in line most closely with the now commonly accepted definition of general intelligence as the rapidity and accuracy with which the organism can adjust itself to relatively new situations. The common

objection urged against the first trial is that the instructions and meaning of the situation may not be understood by the subject. This is really no objection at all if one will but consider the instructions, which should at all times be standardized and rigorously adhered to, as a part of the test. This principle does not seem to have been thoroughly grasped by some workers in the field of standardization. So far then, theoretically, the time of the first trial as well as the average time for three trials might be held to be reliable indices of form-board ability.

With this exposition of the question we believe we have demonstrated that no particular index has as yet been shown to be the most reliable either on theoretical or experimental grounds. However, we believe that an acceptable criterion can be found. If we make the assumption that individuals within a group develop while maintaining relatively their same differences of ability, we might say that that measure is the truest index which yields the highest correlation between the rankings of the same individuals from one period of time to another. By the use of correlational formulae the various indices in question can readily be submitted to this test.

Fortunately, we have the records of thirty-two children (18 deaf and 14 hearing) tested in October 1914 and again in October 1915. In an article¹ presenting those results the fact was brought out that the rank correlations based on the average of three trials showed a Pearson r of $+.64$ for the deaf children and $+.88$ for the hearing children, although the correlations were computed from records taken one year apart. We here present similar correlations for five indices, the time for the first trial, for the second trial, for the third trial, for the shortest trial, and for the average of three trials. We have ranked the deaf and hearing children as a group and have omitted the record of one child whose record showed a gain from one year to the next out of all proportion to the gains of the rest of the children. This gives us 31 children whose records serve as the basis of the correlation. Spearman's foot-rule or R -method was used and converted into Pearson r values by reference to Whipple's manual.² Table I gives the results of these five correlations. The first trial records in 1914 were used in ranking the children and then these ranks were correlated with the first trial records in 1915. The same procedure was used in determining the correlations for the other indices. Column 1 of table I gives the index used for purposes of correlation, column 2 the Spearman R value, column 3 the Pearson r value, column 4 the

¹ Pintner, R. and Paterson, D. G. *Op. cit.*

² Whipple, G. M. *Manual of mental and physical tests.* Baltimore: Warwick & York, 1915. Vol. I, pp. 42-44.

probable error (P. E.), and column 5 the reliability of r , i. e. the relation between the size of the r and the P. E.

TABLE I. CORRELATIONS OF FIVE INDICES OF FORMBOARD ABILITY.

The Index	R value	r value	P. E.	Reliability of r
First trial 1914 with first trial 1915.....	+ .46	+ .66	.0863	7.6
Second trial 1914 with second trial 1915....	+ .43	+ .62	.0863	7.1
Third trial 1914 with third trial 1915.....	+ .30	+ .45	.1133	3.9
Shortest trial 1914 with shortest trial 1915..	+ .44	+ .64	.0863	7.4
Average of three trials 1914 with average of three trials 1915.....	+ .56	+ .77	.0688	11.1

The correlation of the first trial ranks in 1914 with the first trial ranks in 1915 yields us an R of +.46, an r of +.66 with a P. E. of .0863. The r is 7.6 times the P. E. and is fairly reliable. The third trial record produces the lowest correlation ($r = +.45$) and according to our criterion would be the least desirable as an index. This is interesting for it fits in with the impression one gets as he gives the test. A child usually tries to make his best record on the third trial and in his haste he makes errors or else fails to put the blocks in on the first attempt thus wasting time. In other words, "Haste makes waste." The first trial record, the second trial record and the shortest trial record seem to yield about the same coefficient of correlation and we would hold are of the same reliability as indices of formboard ability. The average of three trials gives the highest correlation of all ($r = +.77$). The r is 11.1 times the P. E. and is very reliable.

These correlations show us that regardless of the index used (with the exception possibly of the third trial record) we find that the children maintain their relative ranks from one year to another although all the children made great gains in formboard ability. Leaving out of consideration the second and third trial records we find that of 13 individuals making a gain in rank from 1914 to 1915 in their first trial records, only six of them gained in position when measured by their shortest trial record while ten gained in their average trial records. Thus the gains probably represent true gains in ability as compared to the other children. If our assumption with which we started out is correct then the average of three trials is the most reliable index of formboard ability for it shows the highest correlation. This result is not strange for it fits in well with the general *a priori* considerations outlined above.

We would conclude, then, that the average of three trials is the

best index because it shows the highest correlation from one period of time to another and because it does not give undue weight to fluctuations of attention although it rightly takes them into consideration, and further because it allows for the influence of the measure of the child's first attack upon the "new situation." In short, all three trials are of importance in determining the child's formboard ability. The average of three trials is the only single index which gives weight to all these factors. *A priori* considerations, the evidence of the close correlation of the average of three trials with the results of thorough mental examinations (Sylvester, *op. cit.*, p. 33), and the fact that the average gave a much higher correlation than did any of the five possible indices, all point to it as the most reliable index of formboard ability.

A FORMBOARD DEMONSTRATION.¹

BY LIGHTNER WITMER, PH.D.,
University of Pennsylvania.

Lynne was a chubby little boy of seven and a half years, who had been diagnosed as an epileptic at the University Hospital. A Wassermann test made a little later gave a negative result. The question which his mother wished to have decided at the Psychological Clinic was, whether or not he was educable, and to what school he should be sent. Several examinations were made. On one of these occasions Dr. Witmer took him before the class in Mental Analysis, and tested him with the Witmer formboard.² When Lynne arrived at the Clinic this afternoon, the table full of picture puzzles fascinated him. The social worker induced him to go upstairs to the demonstration room by taking a box with a puzzle in it and suggesting that they "go upstairs where there was a nice little table to fit him, in a big sunny room." Then he went willingly enough. During his entire stay of nearly an hour his mind seemed fixed on the puzzle, and he made attempts from time to time to get back to it.

"He is just at the stage," said Dr. Witmer, "when memory is an important item. Come over here, Lynne." He came to the smaller table where the formboard was lying, but almost immediately went back to the larger table and his picture puzzle. Dr. Witmer moved the formboard to the larger table, while an assistant gathered the pieces of the puzzle into the box and handed it to the social worker for safe keeping. "I want you to see how fast you can put these blocks away," Dr. Witmer said, adding for the benefit of the class, "See the distractable attention." Lynne broke out in a half-whine, half-growl, "I wanna go to Mamma." He was chewing on something, probably gum, which impeded his articulation. When Dr. Witmer said, "No, you go on with this," Lynne grasped a block in each hand, and gazed around the room. Dr. Witmer continued,—

"There is nothing here that can be called 'looking.' That means there is no true observation. He is able to see things. He is even able to see the proper place for the blocks to go. He has two blocks now in the proper places, but he never looks around the board. That is faulty observation, a nearly complete lack of analytic attention. Now and then, almost by chance as he moves a block over the board, he seems to see the right space. We can tell that he actually

¹ Reported by A. Travis, Recorder of the Psychological Clinic.

² See Young, H. H. The Witmer Formboard. *THE PSYCHOL. CLINIC*, Vol. X, No. 4.

does see the right space. The block doesn't slip in by pure accident, but there is a great deal of chance in his getting it in the right place.

"He has a certain amount of understanding, a low grade of understanding of what this test is. This child does not fail completely to understand the test. Good! Now you have got four put away. Again he is trying a block in the right place. Good! You see, after doing all that, after showing a recognition of the block and the space where it should go, he tries to put the star in a triangle, and when it won't go in he keeps wriggling it around and trying to force it in. That shows faulty understanding. He doesn't comprehend that each one of these blocks has its appropriate space, and the block cannot possibly be forced into the wrong place. Are those right? (Lynne nodded assent.) No, they're not. You fix them up and get them all in the right place.

"His performance with this formboard we would rate a failure, that is he cannot put all the blocks away without being continually stimulated to go on. He would be satisfied to leave these blocks resting over the wrong spaces. In other words, this performance is a failure unless we instruct him; and these words of incitement with which we encourage him to go on, are words of instruction. Without instruction he cannot perform this test. It is above his developmental level at the moment. Measuring his performance in terms of normal children, we can say that he is certainly below the four-year level, possibly below the three-year level.

"Now we will make the instruction more specific. Take these out, they are not in the right places. Find the right place for that one. That's not the right place. No, find the right place for that one before you give it up. (Lynne went on trying to squeeze the isosceles triangle into the equilateral space.) You see, he understands language. Try another place. Look all around and put it in the right place. That's right. Now put that one in the right place. (Lynne was trying to force the ellipse into the diamond.) Try that place (pointing to the elliptical space). Now put another one away."

Lynne placed correctly three blocks in succession. As soon as he had finished he went to the social worker, took from her the picture puzzle box, and brought it back to the table, where Dr. Witmer took it away from him, saying,—

"Try this again; try these all by yourself. There is no use keeping a record of the time there. Good! That's a difficult one to put away, that isosceles triangle, and that shows a certain amount of memory. He has retained the position of that block. This one he hasn't got so well. Now he has got it. Good! (Lynne tried

the circle in the rectangle, than placed the rectangle in its own space and went back to put the circle in the circular space.) It seems like an almost impossible situation for a child, to do so well at one moment, and blunder so at the next. It looks as though his attention were dissipated. He has got them all put away except the two most difficult blocks."

Lynne looked up and remarked, "'At's all right."

"No, they are not all right. Fix them right. Here again is a measure of intelligence and understanding. He had got everything done down to the last two blocks, which are somewhat similar. He can't get them in, but instead of solving this particular problem, he keeps on in a very stupid way, trying to force the blocks into the wrong places. It doesn't seem to have occurred to him to change them. Perhaps almost by accident he will move over and try the block in the right place. Now he has got the block over the right place, but in an imperfect position. He has got his mind wholly on that one position. First he tried one block in it, then the other block, but he hasn't yet solved it. Those two aren't right (pointing to the two triangles).

"This boy's mother says he is very anxious to learn. He has learned something here. I have here a record of his first examination. At the first trial with this formboard he was able to place the circle. The record reads,—'After innumerable trials he put the circle in the right place, and apparently it was done with comprehension, but none of the other blocks were put in the right place. He had to be urged to keep at the test. Dr. Witmer selected the circle, the cross, and the semi-circle, and attempted to teach him to place these three blocks.' No further tests were given at that time, the reason being that I did not want to spoil him for the tests today. He did very much better today.

"That's good. Now you can do it all by yourself. I have a clock here (showing him the stop-watch) and I am going to see how fast you can do it. You see him in the process of learning,—either that or his attention is too fluctuating to hold him to the task. But this particular block, the square, which is one of the easiest next to the circle, he is not placing correctly, probably because he doesn't keep his attention concentrated on the work in hand. That is a lack of persistent as well as of analytic attention. You see how he takes a block and tries to force it into the wrong position, keeping on stupidly trying to do it. We may call that a lack of analytic attention,—his failure to see that the block cannot possibly be forced into that space. He takes out one which is in the right place, in order to try the wrong block in that place. Now he has found the right

place for the star. Good! You see he is learning how to do this, but he hasn't yet learned it. He is just in the process of learning. Fine! Go ahead! Time: 2 minutes 30 seconds.

"We want to try it once more." Lynne's face fell, and a murmur of sympathy came from the class. "This is not a bitter disappointment, remember. Go ahead, quick! See how fast you can do it this time. He makes straight for the right place. Now he tries the square in the wrong place, in the circle, taking out the circle. Those of you who are near enough can observe a slight tremor of the hands as he tries to put these blocks away, like the hands of an old man. That would indicate some nervous disease, and caused us to send him over to the Medical Clinic last week. I regard him as primarily a medical case. Time: 1 minute, 30 seconds."

Dr. Witmer placed before Lynne the tray with two kinds of pegs, plain and colored. Told to pick out a red one, he gave yellow. Q. Is that right? A. Yeh. Q. Pick out a blue one, give me a blue one. Again Lynne gave yellow. Q. Give me another blue one like this. Lynne gave yellow for the third time. Dr. Witmer remarked: "He doesn't even know how to match colors, for when I said another, he gave me a different color from the one in my hand. Pick out one just like that" (red). Lynne picked up two yellow pegs and one blue, and handed them to Dr. Witmer.

The pegs were taken away, and the Witmer cylinders put before him. Dr. Witmer ran his fingers around the top of the cylinders as they stood in position, saying,—“See now they all fit? I am going to take these out and put them in there. Now you put them all back. From his performance with the formboard you can probably make some kind of estimate as to how long it would take him to do this test. The child who hasn't got enough analytic attention to learn the formboard at seven years more quickly than he learned it, isn't going to be able to learn his letters. To learn letters requires an acute detailed analytic attention to form as well as an understanding.”

Lynne put the cylinders in at random, but showed better persistence than with the formboard, and his face wore a pleased expression. He put two short cylinders in the same deep socket, put very small cylinders into the largest holes, and tried to squeeze large cylinders into holes too small for them. One he got right by accident. Four were still unplaced, when he turned away and reached for the picture puzzle. Dr. Witmer commented,—

"You see, the cylinder test is a failure, and there is no question of measuring his intelligence by that test. It is far above not only his level of development, but his level of intelligence. Good-bye Lynne, you may go down to your mother now, and come back to see us another day."

TRANSIENT DELUSIONS DUE TO SYPHILIS

BY ELEANOR LARRABEE LATTIMORE, PH.D.,

In Charge Social Service Department, Psychological Clinic, University of Pennsylvania.

Richard was fifteen years old and had obtained his working papers but he could not keep a job. He had trouble with his employers, and bore grudges toward his fellow employees. He was insubordinate, refusing to carry out instructions because of his unreasonable fear of the dark where skeletons and ghosts flit. He could not serve his apprenticeship as a shoe clerk satisfactorily because the stock room was in the basement and it is common knowledge that spooks haunt the corners of dark basements. When sent there on errands he would think of ghosts of people—people he had never seen in real life—who were covered with cloth. If he heard something moving in the room it would "scare the wits out of him." If voices were heard from the adjoining room he knew they were the voices of ghosts. "They were always scrapping with me," he said, "and going to kill me. They had a knife something like a burglar's, and were bony."

Richard had seen skeletons in a museum, where he went with his teacher, and once in a shop window, and again while playing. He has studied "about the flesh and the inside organs" and it "scares him a little bit" when he thinks of them. He saw ghosts at home when alone in the dark. He saw one once in the kitchen. The chief ghost always seemed to be the same person but "of course they are not real" he concluded.

There was a peculiar mental conflict here. While realizing the ghosts were not real, yet his mind constantly dwelt upon them to such an extent that he felt he could not do his share in the support of the family. He brooded upon this inability to such a degree that kind friends wondered if he were not insane. It was upon this suspicion that the social worker brought him to the Psychological Clinic.

Richard was a delicate-looking undersized boy with a haunted and wistful expression. He had no marked physical stigmata but was hollow-chested and round-shouldered. His palate was high and contracted, his teeth in very bad condition. He had practised masturbation until recently when a boy friend warned him of the evil effects.

His home surroundings were poor, the family occupying the unheated third floor of a house, the two boys sleeping in one room, the parents and two girls of five and ten years of age occupying the other. The remainder of the house, including the use of the bath, was sublet.

The mental tests showed him to be of normal mentality with no tendency to insanity. There was no fixed phobia.

The Courtis Speed Tests in arithmetic showed him to be able to do about sixth grade work, being especially good in subtraction but below grade in multiplication and division.

He had a memory span of six digits.

He responded readily in the test of "opposites," and in the recognition of absurdities. He copied designs with the design blocks and completed the Witmer Cylinders and the Healy Construction Puzzle B, rapidly.

His response to the Jung Association test was entirely normal. All his work was done intelligently.

As a result of the psychological examination it was decided to build him up physically and to provide him with friendly counsel.

Accordingly a medical examination was made and a positive Wassermann test was obtained. He was given a cathartic and a tonic and sent to a boy's camp where one of the councilors took an interest in him. After his return he was put on anti-syphilitic treatment. He has taken his treatment faithfully and has reported to the dispensary regularly for a year and the results fully justify the effort expended.

He has lost his haunted expression and his former grouchiness. He is genial, companionable, and cheerful, a great favorite with all with whom he comes in contact, young and old like. He sees no more skeletons, and no longer thinks of them. Soon he will be in condition to have the necessary dentistry done. For six months he has been working steadily, earning \$6.25 a week, as compared with a former occasional maximum of \$3.00 of a year ago.

REVIEWS AND CRITICISM.

How to Use Your Mind. By Harry D. Kitson, Ph.D. Philadelphia and London: The J. B. Lippincott Company, 1916. Pp. 216.

Modern behavioristic psychology has been defined as the study of the habits of man and other animals. There is nothing new in the recognition of habit as a controlling force in man's destiny but there is not much that is newer in science than the employment of method in the investigation of the laws of habit. Very new indeed is the application of these laws by the student to increase his ability.

Dr. Kitson, who is instructor in psychology at the University of Chicago, prepared a series of lectures for his course entitled "Methods of Study." These lectures he has made into an absorbingly interesting book. Written particularly for freshmen and high school students, it is adapted to give the man entering college a vigorous start toward the baccalaureate. It is the common experience of college teachers that their students do not know how to use their minds. It is no less the common and unfortunate experience of students to pass through college without finding a teacher who can show them how to use their minds. This Dr. Kitson's book can do, if only the reader has already mind enough to grasp and act upon it. Not that he must be a freshman. Men and women who have taken a college degree may find that it is not too late to make over some of their intellectual habits. Brain workers in business and industry who are seeking mental efficiency outside of college, will find the book a safe and ardent guide.

Dr. Kitson's power of suggestion is as great as his scholarship is sound, and his English is equal to both.

A. T.

The Slavery of Prostitution. By Maude E. Miner. New York: The Macmillan Company, 1916. Pp. 308.

This is the book of which Miss Jane Addams said, "It is a matter of grave moment to the public that the great theme of *The Slavery of Prostitution* should be freely and rationally discussed by one so well equipped as Miss Miner has been, both by scholarly research and years of probation work in the Night Court." A reviewer in *The Survey* adds, "It deals with a subject on which every intelligent citizen, and especially every voluntary or professional social worker, should read one book—and be grateful that he need not read many."

Miss Miner herself says it "is neither a 'vice report' nor a philosophical treatise, but an earnest study of . . . the condition of a large number of girls and women whom I have known in the Night Court in New York City and of many of the three thousand girls whom I have known through the New York Probation and Protective Association. These girls have not been, except in rare instances, physically enslaved; but through loss of freedom of will and of action they have been bound to prostitution. . . . The need," she continues, "has been shown of a vigorous campaign of law enforcement, directed especially against exploiters who stimulate the demand for prostitution and the supply of young girls to meet that demand. Protection of difficult and runaway girls, organization of the Girls' Protective League, and educational work to lessen

demand and supply, have been part of a program of prevention. At the same time that protective barriers must be raised by society around feeble-minded, ignorant, untrained, and defenseless girls, educational work must be carried on among boys and girls to strengthen character."

In spite of the author's disavowal, a good part of her book does read like the reports of the Vice Committees of large cities. This is because it is made up, like them, of the true stories told by the women who are sick of the life and anxious to get out of it. How they came to go into it, is not so convincingly explained. A psychological analysis is needed of the mental factors which make prostitution seem to many a desirable career. We cannot expect the materials for such a study to be furnished by the women concerned. For one thing, they are in no mood for narrative at the outset. Action takes up the field of their attention, and they are not accessible to investigation. It is only when the glamour has faded and the motive is dead, that they turn their energies to explanation. Naturally this gives only half the story. Psychology will remain incomplete until it can devise some way of getting the other half. The insight of social workers has supplied much of the picture. Now and then the imagination of a creative genius like Casanova has given us a glimpse of the other side. Perhaps no one has yet shown us so much as Miss Miner has in this book of hers. But there is still something lacking. Negro slavery was hideous and degrading, but for all that it had humor, it had laughter. There is not a gleam of humor in the system of prostitution as Miss Miner sees it. As long as humor is left out we have not all the story. Some day there will come a psychologist, or maybe a sociologist, who will take the whole confused thing apart and put it together for us, humor and all. If then we see that the humor from the woman's side is akin to tragedy we may be on the point of understanding.

A. T.

[Reprinted from *The Masses* for August, 1916.]

The American College. By Isaac Sharpless. The American Books Series. Doubleday, Page & Co., 1915.

"The American College" is the title of a little handbook by Isaac Sharpless, President of Haverford College. Its aim is "to give to the general reader a fair idea, hiding neither blemishes nor virtues of that peculiarly national institution:" and, if the blemishes are more apparent than the virtues, that is not his fault—though it is doubtful if he knows how apparent they are. Begotten, most of them, in theology, as he relates, American colleges have remained detached (though he does not say so) from the life of the nation. No American university has ever been the center of an intellectual conflict; it would be possible to write the history of the United States without mentioning an American university. The fact that Harvard had at one time on its staff as many as two distinguished men, James and Santayana, is an anomaly in American university history; and the sociological activities of the University of Wisconsin are more anomalous still. What is more characteristic of the American college is the fact that the greatest original thinker now living in America, Thorstein Veblen, is relegated to a subordinate position in the University of Missouri. Such is the American College. It is not strange that this tideless and stagnant backwater of Amer-

ican life should have no history—or a history so devoid of significance that it is adequately disposed of in a few pages of Dr. Sharpless' book. At first glance his account, covering the academic achievements of nearly three centuries in forty pages, may seem sketchy: but forty pages is enough—the brief and simple annals of the dull.

Escaping with apparent relief from this part of his task, Dr. Sharpless takes up with some enthusiasm, and in great detail, the subject of "College Administration." Dr. Sharpless has administered a college, he knows how it should be done, and he tells all about it. "The ideal president will be to the student a paternal adviser and a strict disciplinarian. . . . He will not seek information from the students against an associate. . . . His final attitude [in the case of the irreclaimably vicious student] will be more of sorrow than of anger or triumph. . . . He will know how to talk to his college as a whole, not too frequently, for much talking is a weariness to hearers and a weakness to himself, but wisely, tactfully, and, if he has it in him, humorously and interestingly. . . . Sometimes he will preach. When his heart fills with a desire for the good of the lives for which he has assumed a responsibility and words come unbidden," etc.

It is, in fact, a primer for college presidents; and if any great proportion of his readers are going to be college presidents, the advice here given will no doubt be of value. But there are other passages of an informative nature. "The President, no matter how ideal," says Dr. Sharpless, "is in one sense an employee of the Board of Trustees. They have selected him, fixed his salary . . . and may discharge him." However, as Dr. Sharpless adds "It is better all around that this relation should be kept in the background."

Concerning freedom of speech and its limitation in American colleges Dr. Sharpless recounts the familiar facts: "There have been cases where professors have published economic or social theories which certain members of the governing board considered unsound and dangerous to have instilled into the thought of students. There have been cases where some hoped-for donor demanded to be propitiated by the sacrifice of an offending teacher." Dr. Sharpless thinks it is safe to "err" on the side of large freedom for an efficient and *experienced* teacher. But—"if a *young* man with more *enthusiasm* than judgment, and with views which most *sensible* people consider morally and socially *dangerous*, unnecessarily and publicly *advertises* them"—I italicize the key words of the sentence—"it may be quite proper to drop him." Quite so!

But it is odd to find, as an instance of unjust limitation of the freedom of speech in colleges, the case of "a tried and faithful professor . . . dismissed in old age purely because a young, unmarried man would do his work for less money." The real trouble is that this is not done often enough. The ordinary American College is a Home for the Aged and Mentally Decrepit. A teacher can easily get fired for being young; but Age is a quality dear to the heart of American academicism.

But if youth is discouraged in professors, not merely youth but boyhood, or rather some qualities of boyishness, are carefully fostered in the student. Treated like a child, he studies like a child, plays like a child, is wilfully naughty like a child. Dr. Sharpless writes at length of these organized survivals of infantilism without understanding what he is dealing with. He accepts infantilism as an

inherent part of college life, to be coaxed and punished in the nursery manner. It never occurs to him that college students can regard themselves, or be regarded by others, as men.

And perhaps he is right. And that is in the nature of a final criticism, a final dismissal, of the College as an institution of learning and of life.

FLOYD DELL.

NEWS AND COMMENT.

Measurement of Efficiency of Schools for the Deaf.

The Conference of Superintendents and Principals of American Schools for the Deaf, meeting in Staunton, Virginia, in July, 1914, appointed a national committee to examine into and report concerning the efficiency of schools for the deaf and methods of measuring such efficiency, etc. Mr. Richard O. Johnson, superintendent Indiana State School for the Deaf, was selected as chairman of the committee, and the other members are: Augustus Rogers, M.A., superintendent of the Kentucky school; A. L. E. Crouter, M.A., LL.D., superintendent of the Pennsylvania school; John W. Jones, M.A., superintendent of the Ohio school; and Professor W. M. Kilpatrick, B.Ph., of the Connecticut school. In 1914 and 1915 three meetings of the committee were held—in Indianapolis, Columbus, Ohio, and Philadelphia. At the request of the committee and with its active co-operation, Dr. Rudolph Pintner, associate professor of Psychology in the Ohio State University, and his collaborator, Mr. Donald G. Paterson, have made certain educational tests in the Indiana, Ohio, and Pennsylvania schools, establishing norms for deaf children for comparison with those for hearing children. An age and grade scale, with age, grade and progress norms, and norms of physical measurements, etc., have been established, and consideration given to school and class measurement of pupils and teachers, preparatory schools and normal training for teachers, literary and industrial curricula, etc., in short, the entire field of education for the deaf has been and is being fully considered by the committee.

Among the tentative conclusions reached, after careful correlation, are those that indicate that the deaf child is three to four years behind the hearing child in learning ability, as tested by the rapidity and accuracy of forming associations between numbers and forms; that the deaf boy and the deaf girl are equal in learning ability, which is not the case with the hearing boy and hearing girl, the latter being the superior; that the deaf boy, however, approximates more closely the hearing boy than does the deaf girl the hearing girl; that there is practically no difference between the learning ability of the congenitally and the adventitiously deaf; and that the test results indicate a high correlation, or correspondence, between the three state schools taken separately and for each of the tests applied in each of the schools. Variations of course, occur in the curves plotted for the separate schools and between those for classification in each school, but generally they approximate each other closely. The curves for girls are more irregular and variable than those for the boys, but in no case are the variations uniform and constant excepting in two instances, *i. e.* in all three schools the girls at eleven years of age show a pronounced drop in attainment while the same occurs in lesser degree for boys at fourteen years of age.

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TOM THE ENIGMA—A CLINIC TEACHER'S REPORT.

BY SARAH WARFIELD PARKER, B.A.,

Bath, N. Y.

Nothing would afford Tom keener satisfaction than to know that he baffles diagnosis. He is a droll enigma. In the fifteen years of his life he has consciously exerted himself to play that role effectively and he has succeeded. In all probability Tom is a high grade imbecile. He thoroughly enjoys appearing at times much less than that, at times much more than that. If he is an imbecile, he is an extraordinarily intelligent one; if he is normal he directs his intelligence in extraordinarily eccentric directions.

At his best, when his face is bronzed, his cheeks flushed with healthy color, when his brown eyes are keen, and his hair neatly smoothed, when he holds himself erect, proud of his well-cut suit and of his smart white tie, he looks like a handsome normal boy. But there was no greater difference between Dr. Jekyll and Mr. Hyde than there is between this Tom and the Tom we see all too frequently. It is not only that his hair is rumpled, his skin pallid, his eyes lusterless and drowsy, but the human intelligence seems to die out of his face, leaving behind the gross animal. He yawns, lolls wearily, swinging his loose body. His arms become flexed at the elbow, the hands dangle weakly from the wrists; his knees knock together, and his feet cross one over the other so that in walking his legs intertwine, throwing him to the ground. The first boy looks like a normal youth of intelligence and refinement; the last, like an idiot-imbecile. Which is Tom? Like many other good people, Tom finds that to be subject to fits adds distinctly to one's personality. Moreover the situation itself appeals to him. If one has a keen sense of humor it is indeed not altogether uninteresting to see how other people will behave in such an emergency. His mother particularly has for years played up admirably, with marked excitement and interest in these attacks. An attack of the "wiggles," as the mother calls it, overtook Tom on the road one day. He required

the support of two able-bodied adults to assist him home, but with his arm on the shoulder of each, walked down the hall quite normally with an expression of frank satisfaction.

One of his supporters remarked, "He's perfectly contented as long as he can victimize some one." Tom accepted it as a compliment, "Yes," he retorted, "you just ought to see how I victimize my family."

Just as the coxcomb in Tom yielded to his pleasure in victimizing his adult associates by simulated fits, so his very real pride in his wit and drollery and in his fund of information yielded to a perverse enjoyment in shamming stupidity. It pandered to his private sense of superiority to see an adult making a fool of herself by teaching him something he already knew; to see his mother patiently showing him how to suck lemonade through a straw while he pretended to be unable to do anything but blow bubbles into the glass—surely there was fun in that. In attempting, therefore, to draw from him reactions which would indicate his mental status, one had to beware of sham stupidity. Such a mental analysis is in this case peculiarly necessary to determine whether his serious retardation in school subjects is due to a defect of mind or to a defect of character.

In the three elementary processes of mind—attention, imagination, and memory—there appears to be no serious defect. Tom's keen observation gives evidence that his analytic concentration of attention is excellent—that he sees not a confused whole, but minute parts. Provided that he is interested, that the end justifies the means, there is no limit to his perseverance at a task. He will spend hours over a large jig-saw puzzle or a drawing. His persistent concentration is excellent when he is constructing anything useful to himself—a sling shot or a wooden sword. To be sure, this perseverance is *nil* where he is bored and uninterested, but such active refusal of attention is indicative of something quite other than a defect of the attention process itself. The distribution of attention, too, is quite as satisfactory as its concentration. Imagination depends primarily on acuity of perception and secondarily upon these qualities of attention. Tom has no defect of hearing, no serious defect of vision other than color blindness of the red-green type. He confuses violet with blue, orange with yellow, and red, green, brown, and gray with each other. He is hugely proud of this defect—a defect which of course makes his visual images abnormal in respect to color but which can have no effect upon imagination as a function of mental activity. In fact, the intensity of his visual images of form and position is high. He reproduces from memory images, complicated designs with the design blocks. In writing the

longer words in his spelling lesson it interests him to put a dot just where he thinks the word will end. It is surprising to see how accurate this mental measurement of space is. Tom likes to draw; he draws railroad trains from memory, reproducing the shape of the engine cab, the cylinders under the cars, the windows, and the ventilators above—all somewhat out of proportion, but nevertheless indicating an accurate visual image of the object drawn. Tom's auditory imagery, though not so intense, is adequate for ordinary use. He recognizes tunes but does not reproduce them very well. He responds quickly to auditory verbal stimuli, though not as quickly as to the same stimuli in visual presentation. That is to say, he remembers more of a story that he has read than of one he has heard, and learns more quickly a jingle which he sees in print than one that some one else repeats. Motor imagery proves adequate for his daily performances. Acuity of the sense organs, attention to stimuli and sensitivity of cerebral cells he has, therefore, in a degree sufficient to determine normal intensity of images.

No greater defect can be found in the associability of these images. The association of images in sequence—that is, memory span, is if anything, something above normal. Binet accepts seven digits as a normal span for a fifteen year old child. Tom's span is eight digits with an occasional success in repeating nine. More complex association does not seem to trouble him. He has the capacity to link images by logical relation as well as by sequence in time. The Woodworth and Wells Logical Relation Association Tests¹ found Tom accurate and fairly ready in his responses. In the series of Twenty Easiest Opposites nineteen reactions were given correctly; in the series of forty opposites thirty-six were correct. Tom is quick to see a joke, to appreciate a pun. His capacity for manipulating the images formed shows every evidence of being normal. The elasticity of his mind is an important asset.

Tom should learn readily, for his memory, too, is good. He is sensitive to impressions; so that his threshold of sensibility is low. He can repeat the main facts in his history lesson after a single reading. He can learn a vocabulary of twelve Latin words in ten minutes. Whatever he learns he retains well. The Latin words, once learned, are not forgotten. The facts which he has picked up here and there, though incomplete and badly organized, form a permanent fund of information. He has read a great deal, and remembers the titles, authors, characters, scenes, and incidents over a fairly long period. He enjoys the role of narrator and keeps by him a store of fairy tales to entertain the children, of anecdotes to

¹Woodworth, R. S., and Wells, F. L. Association Tests. *Psychol. Rev. Monog. Sup.* No. 57, 1911.

amuse his older companions. This memory is not wholly verbal or mechanical. To be sure, Tom's most accurate memory is for words but those words are to him rich in connotation, full of meaning that he has gathered, not from definition, but from reading and experience. A number of his own definitions of words, chosen from a single week's work, will show how meaningful is his vocabulary.

Canyon—"A gash in the rocks like the Grand Canyon of the Colorado out west."

Avalanche—"When things get to going so fast down the side of a hill that you can't stop it and things are buried."

Tyrant—"A bad king."

Advantage—"When you get a chance to do something to a man you don't like."

Eccentric—"Queer. Why don't you pronounce it essentric?"

Ambassador—"A man at a king's court."

Dense—"Do you mean dense darkness or dense in your studies?"

Climate—"If somebody from up here goes south and it's too hot, he says, 'I guess I'll go back home. This climate isn't good.'"

Imitation—"When you copy another gink's writing."

Muscle—"Do you mean the shell or the thing in your arm?"

Divide—He illustrated the concept by drawing his two hands together down the middle of the desk, then separating them to right and left.

Swindler—"A man who swindles gets things that don't belong to him, without permission."

Journal—"A paper you read."

Tenement—"A dirty house in New York."

One day, when I gave him the word "vote," Tom flashed back the question, "Are you a suffragette?"

"I believe in suffrage," I answered.

His retort was instant, "Then you can't teach me."

There is, I think, no question that words stand for ideas and images in Tom's mind—that they are symbols of a somewhat rich mental content. Although in repeating stories he retains much of the vocabulary of the original, the relation of incident to incident, frequent variation of phrasing, and understanding comment bespeak his comprehension of the story. The only serious incapacity in the comprehension of meaning seems to be Tom's extraordinary inability to appreciate time and space. A trip of two hours he declares to have been shorter than a trip of half an hour; his voyage across the Atlantic to have taken no longer than a journey by train from New York to Philadelphia. He estimated a house standing on a hill a

quarter of a mile or more across the valley to be "about a foot away." How much of this apparent ignorance is willful perversity one cannot tell. It was sufficiently convincing, at least, to impel his father and mother to take him to Europe to teach him distance. Even this spectacular pedagogic method failed.

It may be well to review the points of mental analysis made thus far. Tom appears to be mentally sound in the three elementary processes of acquiring, relating, and retaining impressions—attention, imagination, and memory. The mental content thus established is, with the grave exception of time and distance, normally meaningful and elastic. The faculty of reasoning may well be only a constructive use of this mental content, and these mental capacities. Since Tom has the volitional qualities of initiative and control, we should expect to find him capable of a purposeful manipulation of these capacities. Observation does not indicate that he falls below par even here. He has distinctly a constructive faculty, an appreciation of the relation of part to whole. He shows this concretely in the effective way he puts together large and difficult jig-saw puzzles. He failed on none of the questions involving reason in the Binet test. In a lesson in mathematical geography his teacher asked him how many small circles could be drawn on the earth's surface, equally distant from the equator. After a few minutes thought Tom answered, "Two, one north and one south."

His constructive imagination is distinctly active—at least in his drawing. He drew, one morning, a brown horse with a curiously thick body, short thin legs, a minute tail, a flying mane, and a red saddle. He told me that the horse was running away, that the man had been thrown from the saddle, and that the mane blew out because the horse was going so fast. His critical faculty is equally active. He was distinctly dissatisfied with the same horse because of the undue bulk of body and the absence of motion in the hind legs. This purposive use of the ability which we call reason, to attend discriminatingly and to associate constructively percepts and retained images, completes the catalog of mental faculties involved in the learning process. In running through this catalog we find nothing to convince us that Tom is mentally defective. We have still to examine those qualities which come under the general terms—energy and volition.

In Tom's activity, at least, these qualities stand in close interrelation. His activities certainly show, more often than not, a very low degree of force. Part of this is due to physical weakness; to the feeble muscles of his hands, and the body so quickly subject to muscular fatigue. Part of it is due to indifference. Where the end

does not to him reasonably justify the means, he does not choose to exert whatever physical and mental force he has. The same situation holds when we turn to rate of movement. Tom is a fairly fast runner. He can win out against all but one of the children in the school. His reaction to the signal for the race is prompt. A speed test, however, is a distinct bore, and therefore there is no particular reason for his wishing to do it well. In the card sorting test his initial time equalled that of a boy abnormally slow as the effect of hemiplegia. His lack of interest and effort was so marked that no attempt was made to obtain a practice curve. In Woodworth and Wells' Number Checking Test his time was 157 seconds—that of the hemiplegia patient 185 seconds, of a moron of the same age 85 seconds; the range of a small number of graduate students tested by Woodworth and Wells, 50 to 100 seconds. In the Courtis Test Tom copied only ten figures in one minute. In the Binet Test, requiring the utterance of at least sixty words in three minutes, he drawled out lazily only forty-seven. Yet his mind does not seem to work with abnormal deliberateness. In the Woodworth and Wells Form Naming Test his record is good.

Range for twelve graduate students tested by Woodworth and Wells		31-60 seconds
Tom	50	"
Moron (15 years)	60	"
Hemiplegic patient (17 years)	80	"

In repartee Tom's mind is particularly alert. His brother exclaimed at breakfast, "I have an idea."

"Keep it. You don't often get one," Tom retorted.

When he first came into the school we made a consistent effort to bring Tom down from his complacent superiority. He commented on it as he sat at his desk, "It's funny, at home my mother thinks I'm the smartest gink there is."

"She can't know you very well, then," I remarked.

"She's known me for fourteen years," he parried quickly.

In energy we have found a marked decline in daily performances, a deficiency in force, due in part to physical inability, in part to lack of effort; a slow rate of movement, combined as it is with swift mental reactions, seems to be determined partially at least by lack of interest and failure to erect the volitional element in action. It is curious to find this same quality of volition as a potential factor, particularly strong in Tom. He is not lacking in initiative. The children are, of course, not allowed to leave the school grounds. The second day Tom disappeared at recess. Presently he appeared

coming through the bushes at the foot of the hill with Sen, the collie, close at his heels. "The other ginks told me Sen could swim," he commented, in his droll deliberate voice, "I don't see any signs of it. I took him down to the pond and threw some sticks in, but he wouldn't go in."

One infers from this persistent curiosity and keen observation, a mind that is spontaneously active. At the end of the first day I spent with Tom I made a list of the questions I remembered from the day's conversation. The list filled three large sheets of paper. I select a few of them as suggestive of his exploring, active mind:

Where does the hall go that's by my room?

Where is John going with that shovel?

Why do you call the dog *Sen* when his name is Senator?

What are you writing down?

Why does Sen jump up on me and wind his leg around mine and try to trip me up?

Where were you born?

What does P. B. & W. R. R. stand for?

Which track do west bound trains go on?

Then why does that sign say to east bound trains when it points west?

Is this station a house too?

Which room is the dining room?

May I climb the fence and make an inspection?

How long would it take a man to clean this car?

How long would it take two men?

Do Angora cats come from Angora?

How does the smoke get through the smoke stack?

Why does the smoke come down to the track when we go through a tunnel?

How much bigger is this car than a box car?

How early do children go to bed in sleeping trains?

Don't you think there's too much smoke in this station for comfort?

Why don't they keep the car tracks clean in Philadelphia?

How far south would you have to go to get out of the United States?

Provided Tom is interested, he never has to be prodded to either mental or physical activity. He acts, too, upon his own idea, not upon someone else's suggestion. He is, therefore, a leader, admired and obeyed by the younger children.

Tom's control is as strong as his initiative. He is able to direct his action so as to give a desired impression, to fool if he wishes his

teachers, his parents, or his companions. He is a boy of his word.

From observation and analysis of Tom I should conclude, that in the most precise significance of the term, he is intelligent. The day that he ruined his garter to make a good sling shot is not the only time he has shown his resourcefulness, his invention. The resources, that is, the mental capacities within which the invention is operative do not appear, from our survey, to be particularly below those of a normal boy. With this evidence of his intelligence and his active will, the low level of Tom's performances, this extreme inefficiency in the operations of daily life, is surprising. His performance level is so low that up to the age of fourteen he has been kept successively in private institutions for the training of quite low grade feeble-minded children. In these institutions, Tom has received excellent physiological training. There he has learned to handle the Seguin and Montessori material for sense training, to write a tremulous script. He reads as well as any fifteen year old boy, but pronounces his sentences in a monotone, without expression or respect for punctuation. Occasionally, when his pride is touched, Tom can quite effectively correct this defect in elocution. He has learned to spell as well as an average boy. It is only necessary for him to see a word several times in reading for it to become fixed in his mind. He has learned to count, and to perceive number. Beyond that he can do nothing in arithmetic. He has either had no training in fundamental processes or has failed to profit by such training. He knows no grammar. Whatever history and geography he knows he has gathered from his reading and from the conversation of his younger brothers. How wide that information is, how interspersed with gaps and misconceptions, how unorganized, one sees in swift examination of Tom:

Q. What is an island?

A. A body of land entirely surrounded by water.

Q. What is a peninsula?

A. A body of land that juts out into the water.

Q. What is a continent?

A. A big piece of land.

Q. What continents do you know?

A. America and Asia.

Q. What is an ocean?

A. A large body of water on the earth's surface.

Q. Where is the North Pole?

A. At the top of the map.

Q. The South Pole?

- A. At the bottom of the map.
- Q. What ocean is at the South Pole?
- A. Antarctic.
- Q. What ocean is at the North Pole?
- A. Arctic.
- Q. Between Europe and America?
- A. Atlantic.
- Q. Between Asia and America?
- A. Pacific.
- Q. South of Asia?
- A. Oh, there's a lot of seas and things there—the Indian Ocean and the Adriatic Sea.
- Q. What is the equator?
- A. The boundary between the United States and Mexico?
- Q. Where is the Adriatic Sea?
- A. Don't know.
- Q. Where is London?
- A. England.
- Q. Where is Paris?
- A. France.
- Q. Where is Berlin?
- A. Germany.
- Q. Where is Rome?
- A. Greece.
- Q. Where is Athens?
- A. Greece.
- Q. Tell me a city in Spain.
- A. Don't know any.
- Q. What mountains are in Switzerland?
- A. Alps.
- Q. What mountains are in Italy?
- A. Don't know any. I've never been there. There are some other mountains in Switzerland, the Adirondacks.
- Q. Where are the Adirondacks?
- A. New York State.
- Q. Where's Mont Blanc?
- A. In the Alps.
- Q. Yes, but in what part?
- A. In the foot hills.
- Q. Where is Niagara Falls?
- A. In the Grand Canyon of the Colorado.
- Q. In what state is it?
- A. Nigara State.

Q. In what state do you live?

A. New York.

Q. In what country do you live?

A. United States.

Q. On what continent do you live?

A. North America.

Q. Do you live in Canada?

A. No.

Q. Is Canada in America?

A. Yes.

Q. In North or South America?

A. South America.

Whatever history he has learned he knows as he knows fiction, as he knows classic myths and fairy tales. The boy has an excellent imaginative background for history but no consecutive knowledge.

The Binet Test professes to test mental age and not training. Tom does not seem to be very much below the normal fifteen year old boy in mentality yet the six year group in the Binet Tests is the first group in which he can pass all the tests. In the seven year old group he can not count the cost of three two-cent and three one-cent stamps. In the eight-year tests he was a bit uncertain as to the date. In the nine-year tests, he made two errors in reciting the months and failed to make change. In the ten-year test he could not compare weights or combine the three words given into a satisfactory sentence. In the twelve-year group he drawled out only forty-seven words in fifteen minutes. In the fifteen-year tests he failed to repeat the twenty-six syllable sentence and the pictures shown did not interest him enough to draw out the interpretation of which he is capable. This, in exact quantitative measure gives Tom a mental age of nine and a half years. The reason for this low rating seems to be his constant failure in questions of number, and his frequent lack of effort in performing the tests.

If indifference and lack of systematic training are the factors in determining this low level of performance, it seems, superficially at least, that these obstacles can be overcome. It appears on the face of it, that under proper instruction Tom is ready to make rapid progress toward a normal education. But such a judgment fails to reckon with the boy himself. Tom is a unique individual. His intelligence and will are confined to resisting systematic education. He asks only one thing of life—to be permitted to do solely the things that interest him. The boy is keen enough to see that the more things he knows how to do the more work he is "let in for." The intelligent person will avoid as much responsibility as possible.

For fourteen years Tom has been relieved of responsibility and he finds it a very satisfactory mode of life. "I don't need to learn to make change," he remarked. "My mother will always be there to do it for me." Tom's position is wholly tenable from a logical point of view. On the basis of avoiding the uninteresting routine of school work and the acquirement of a dangerous efficiency, he sets himself obstinately against systematic training.

Tom is perfectly satisfied with his present acquirements. He already feels superior to every individual whom he has met. The fifth day he was in the school he summed up the mental status of the other children.

"Does Jack know much?" he asked.

"Yes, don't you think so?" I asked in return.

"I haven't seen much that he knows," Tom remarked. I started a cross examination of my own.

"Who do you think knows most in the school?"

"I," Tom answered with calm brevity.

"But of the others, I mean?" I continued.

"William."

"And after William?"

"Jack."

"What do you think about Margaret?"

"She doesn't spell very well."

"Don't you think she knows other things?"

"I haven't seen what she knows yet."

Tom is quite as confident, though a bit less frank in judging his teachers and examiners. He is satisfied with his superiority and wishes to be left at leisure to play Indian, read, put jig-saw puzzles together, to do what he desires.

Tom started his experiment the very day that he came into the school. He tried out those who had him in charge, to see how far he could escape obedience, how much work he could avoid. He made his first stand against the afternoon rest hour. The matron told him to take off his shoes and lie down. Ten minutes later she found him downstairs in a heavier pair of shoes. She sent him up again, only to find him a little later, wandering restlessly about the room. The third time she discovered him on the floor, leaning his head against the bed, kicking his heels in the air. When she commanded him to lie down, his eyes narrowed to tiny slits and he mumbled defiantly, "You bull, bull, bull." I found him again in the same position on the floor, sullen, muttering, "I'm not tired. I won't rest." After a brief parley I got him to his feet. He grabbed a box cover,—

"Now I've got something to hammer you over the head with."

In my indifference I did not seem worth hammering so he dropped the cover. He was finally persuaded as far as the bed. Once there he drew his knees up to his chin and growled, "I won't lie on my back. I'll curl up as much as I can." After further threats to throw the blanket up to the ceiling and to jump out of the window, Tom gave in and lay for a few minutes quietly resting. After three successive days in which he lost out, he gave up his point, and on the fourth, responded with a cheerful, "Sure." He still avoids the boredom of a real rest by playing sailor or talking to himself.

Another crucial contest was fought on the point of immediate obedience to the call to school. One morning after recess the uncongenial summons interrupted Tom in an interesting project to make a waterfall by dumping tubs of water over the hill. Tom reverted to his "Bull, bull, bull," and *refused* to come.

"Very well," I said, "You come now or not at all."

"Then I shan't come at all," he mumbled.

"Certainly," I agreed, "and you go to bed for the afternoon."

Three minutes later he appeared sheepishly in the door of the school room, "I guess I won't go to bed this afternoon."

To his surprise he found it was too late. He was refused admission and spent the afternoon in bed. Several days in bed on a cereal diet similarly cured him of going to the lake without permission.

Because of his nervous attacks his mother had never taken him on city streets, into stores, or to the theater. He was taken frequently after coming to the school, to accustom him to more normal life. At first he had no regard for appearances. He slouched and thumped his feet because he liked to hear the noise they made. Although he could walk a mile in the country without fatigue, he felt that it was beneath his dignity to walk a single block in the city. He would begin immediately to stumble, to mutter that he thought he was going to have a fit, that we ought to take a taxi. This ridiculous behavior was particularly anomalous after you had watched the alert intelligence of Tom's face as he listened to Bernard Shaw's "Pygmalion." The willful element was definitely demonstrated. The next time he went to town his teacher told him that if he walked well and did not mention being tired she would take him to the moving pictures. He walked steadily erect through an hour's shopping and made no complaint.

Within a month's time all active resistance was overcome. Tom is the first person to see when the game is not worth the struggle. He now yields prompt and cheerful obedience. Yet he has by no

means surrendered in the fight against learning anything through study. Most pedagogic methods seem foolish to him. Oral composition is particularly ridiculous. In the days when his resistance was still active I recorded a typical incident. When he was asked to reproduce a fairy tale he had read, he answered, logically, "I've read it to you, you know it. I told you one story yesterday, that's enough."

"I don't want to do it, and I won't" he persisted. "I said no and I mean it." He gave in when he found that the struggle only postponed indefinitely his recess hour, but the incident is typical of his attitude toward the recitation of any lesson. His position is one of extreme impatience, "I know it and you know it. What's the use of all this fuss?" Though he has yielded all active resistance, his passive refusal to co-operate is quite as effective. One teacher wrote on January 5th, "His general attitude is bored. His voice in reading is bored. There is no energy in anything he does except in his curiosity and criticism. When tired he grunts, lolls, scratches his head, makes random responses. He becomes glum when you ask him anything he does not know."

Another teacher wrote on February 3d, "I had no control over him. He complained every ten minutes of being tired, rubbed his eyes and hair, yawned and sighed. His face and legs were twitching, and he acted as if he were going to have a fit any minute. He had to have recess every twenty minutes and during his twenty minutes of supposed work made no effort of any kind and appeared bored to death. All information he deemed unnecessary because his mother and father could always look after him anyway. For two weeks I tried unsuccessfully to teach him the geographical relation of the continents to the oceans. He could do no arithmetic—not even between one and six."

A third teacher records: "Tom writes a copy each day. He doesn't exert himself very much or try to write any better. His writing in ink is very shaky. He tried today and it is slowly showing slight improvement. He is very much bored by work of this kind. He reads fluently but without expression."

April 6th: "He has never studied alone. His idea of studying is to read his history lesson over once and remember what he can of it. He is very much bored by explanations. He likes to read along without paying attention to details."

April 7th: "Tom worked some examples in addition; work pretty inaccurate. He is very much bored by an oral lesson in arithmetic. He was very fidgety, kept moving his feet, scratching

his head, and his eyes looked as if he were only half awake. I asked him whether he felt tired, and he said, "Tired of this arithmetic."

April 9th: "About the only thing Tom likes to do is to play Indian or read."

Tom is superior to any mass of information that you may present to him. He knows enough of the stories of history to think that the study is superfluous. Arithmetic is absurd and wholly unnecessary. Latin piqued his interest for a few days but he quite naturally considers declensions and conjugations useless and translates with a dignified disregard of verb and noun forms. His writing is legible; his reading intelligible. Why should he trouble himself to make them any better? With his droll originality and talent in oral narration he should be able to write interesting compositions. Writing is, however, too slow a means of expression. Tom will write nothing but a succinct summary of facts. Geography and a few of the elementary facts of astronomy are the two subjects to which he has responded most warmly. In all probability his response to these latter subjects was due to the way in which they were presented. The only favorable report of Tom comes from a teacher who took him in hand for drill in geography:

"Tom is now a changed boy. He has in the last ten days learned the geography of Sweden, Norway, Russia, Ireland, and Scotland. Besides this, he has learned ten mountain ranges in other countries, eight straits and some of the history of Sweden and Norway. He also now does sums of three numbers, making about five mistakes out of fourteen examples. This improvement is due to competition with William—to wanting to show William, whom he adores, how smart he is and also to wanting to make Jack by comparison a laughing stock. He has to be taught in a special way that amuses him so that the whole thing appears as an entertaining game. It is no use to keep at one thing too long. He learns best if you jump quickly from one thing to another. This method seems to him worthy of his intelligence. I have succeeded in impressing him to the point that he even grants my superior cleverness. We have also to season our work with rough play in order to get the best results. William has to be in the game and all three of us often try contests in quickly naming places in geography."

Frankly I do not know whether or not we should call Tom feeble-minded. If the term implies a physiological deficiency, cerebral or otherwise, I hesitate; for except for an organism which is generally weakened by malnutrition I do not believe that Tom has any such deficiency. If the term is purely of patho-social significance and describes an individual altogether inefficient in the per-

formances of society, Tom is certainly feeble-minded. He presents a puzzling enigma because he has been so far an agent in perpetuating his own insufficiency of which the initial cause was physical.

Psychological training is not the urgent remedy for this case. Tom requires first a restoration of his physical energies, then contact with a strong personality. He needs a teacher clever enough to command his respect, vigorous enough to overcome his resistance, resourceful enough to make useful study coincide with his interests,—an individual endowed with a dynamic energy that will create in the boy the incentive to work. He is too cold, too undemonstrative, too egoistic to be stirred by personal loyalty to any one but himself. Egoism and uncompromising justice are the two fundamental qualities of his character. Between Tom and the personality which is strong enough to master him, the contest must be one of wit and will.

TWO FEEBLEMINDED MAIDENS—A CLINICAL LECTURE.¹

BY LIGHTNER WITMER, PH.D.,
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One Saturday morning in December, two girls were brought to the Psychological Clinic by their teacher, Miss Margaret Kemble, whose special class they had attended for four years. Jane was nearly sixteen; Ethel was fourteen and a half. Not related by blood, they were yet so much alike in mentality and behavior that they might well have passed for sisters. They had worked together and played together during these four years and were very congenial friends.

This was Jane's first visit to the Clinic. With her came her father's sister whom she called mother and who had adopted Jane on the death of her real mother when she was only two weeks old. The father had died of tuberculosis when she was between two and three. There was very little in the history to throw light upon Jane's mental condition. She was apparently a normal baby, healthy though very small; and gave no trouble. She was an only child, and her parents were of sound stock. The aunt reported that during her pregnancy, for reasons not known, the mother began to drink, and this affected her mind. All the relatives on both sides were said to be normal and there is no other case of feeble-mindedness or intemperance known among them.

Jane was a little slow in learning to walk and talk, but not slower than a great many normal children. Her health was fairly good. She had measles, scarlet fever, whooping cough, and bronchitis. At present she has catarrh and her physician suspects adenoids, but she has been too nervous and excitable to endure a thorough examination of her throat.

She is very slow in everything she does. She is a rather agreeable companion, and gets on well with other children. She is particular about her appearance and has a certain taste in dress. Her aunt finds her a help with the housework.

Ethel had been here before, in November, 1910. Like Jane, she was an only child and appeared to be a normal baby, giving no trouble before she was two years old. On the mother's side of the family there was a good deal of tuberculosis, but the mother herself was healthy. There was no feeble-mindedness or insanity known among any of the relatives.

Ethel has always been irritable and emotional, and does not get on particularly well with other children. Her general health has been good since her tonsils and adenoids were removed by Dr. George C. Stout in December, 1910. She still holds her mouth open, and her voice is nasal.

The two girls were taken by Dr. Witmer before the class in Clinical Psychology, and under his eye were put through the mental tests by two advanced graduate students, Mrs. Ide and Mr. Humpstone.

Jane used both hands in doing the Witmer formboard. Her fingers were thick and clumsy, and a slight tremor of the hands was apparent as the work progressed. On the first trial she placed all eleven blocks correctly in 32 sec.,

¹ Delivered to the Class in Clinical Psychology, December 9, 1916, and reported by A. Travis, Recorder of the Psychological Clinic.

and in the same time on the third trial. On the second trial she spent 44 sec. and left the isosceles triangle lying upside down over its recess, a very significant error. Her shortest time of three trials with the formboard was 32 sec., and Dr. Young¹ found this to be the median for girls of 6 years and 9 months.

The Witmer cylinders she was unable to place without instruction. At the end of 84 sec. she stopped with two cylinders still unplaced and only three right. Then Dr. Witmer asked her,—“Does that look right? Try and find the place for them.” Jane hesitatingly removed one cylinder that was right.

Dr. Witmer continued,—“Now we will assume that she can't do this. I am trying to get a little more standardisation in our instructions. See, Jane, that sticks up too far. Try to find one that goes in there. That's right, now go on.”

Jane stopped again with one unplaced. Dr. Witmer said to her,—“You haven't got them all in. Get them right, you haven't got them right;” and then to the class, “I am trying to see how well she can do this, and with how little teaching. She quite overlooks the one that is not right, separated by one from its own socket. That probably indicates a very high threshold of discrimination, due to faulty analytic attention. She has gone by it time after time. Now I will tell her:

“That one's wrong” (rattling it with one finger). “Don't you see that's too loose? Now get those right. You will notice a difference of one she let pass, but a difference of two she will not let pass; it sticks up too far.

“That one isn't in the right place, Jane. Don't you see it's too low? Try it in the right place. It's right now. Now put the right one in that open hole.”

Jane stopped with two cylinders interchanged. Dr. Witmer continued to the class,—“She succeeded in getting all the blocks away with twelve to fifteen elements of instruction. I don't know what we will call these. I want to standardize these elements of instruction before long. I only once put a block in position for her, but half a dozen times a block was pointed to and said to be wrong. Now we will take them all out again, and we will see whether she can do the thing after having done it once with the minimum amount of instruction necessary to get her to accomplish it.”

At the end of the second trial Jane stopped with one pair of large and one pair of small cylinders interchanged. Dr. Witmer said,—“Look at them. Is that right?”

She corrected the two large cylinders, which differed by one, in 10 sec., then after looking at them for 20 sec. longer, she corrected the two smaller ones. Dr. Witmer remarked,—“Miss Kemble says this slowness is very characteristic of Jane. There you see the mental process spread out over five to ten times the ordinary amount. What she did with those last two blocks, many children do in trying to remember the multiplication table, or some passage they have read or heard read.”

On the third trial Jane replaced all the cylinders without help in 4 min. 57 sec.

Her performance in copying patterns with four design blocks was not significant, except that it showed her characteristic slowness and inability to recognize her own mistakes.

In the third reader she read one word at a time and made a few careless mistakes. Afterwards she gave a faithful reproduction of the story she had just read.

¹ Young, H. H. The Witmer Formboard. *The Psychological Clinic*, X, 4, 93-111.

Jane's arithmetic was very uncertain. Miss Kemble had drilled her on the multiplication table as far as the seven-times. Nevertheless Jane said $4 \times 4 = 44$, $4 \times 8 = 48$; $5 \times 10 = 50$, but $10 \times 5 = 15$. She stared blankly when Mrs. Ide explained that 5×10 and 10×5 are the same thing. Even when she gave the correct answer to simple multiplications, she had to repeat the problem first, and sometimes went over the preceding stage in the table as well, showing that she depended entirely upon rote memory for her associations. Counting by twos to 20, she skipped 12 and 18. Attempting to count by threes she said, 3, 6, 8, 9, 10. She would not even try to count by tens.

Jane named the six colors, red, green, blue, yellow, white, and black when shown to her. Her auditory memory span was limited to four digits.

Sent to the blackboard, she wrote from dictation *See The little boy*, using a capital T for *The*. She wrote her name; then her birthday as Febrdy 27, 1916, but corrected the year to 1901 when her aunt prompted her. Her hand seemed feeble, and the chalk marks on the board were very pale. She knew the date, said it slowly, and then wrote it. In writing easy words from dictation she made many careless mistakes, as "bage" for *cage*, "daink" for *drink*, and "bax" for *box*.

Jane knew it was morning, but could not tell why she knew it. The Healy Completion Test was an utter failure. No reasons were developed until after Mrs. Ide had made many suggestions. Then two or three correct placements were made.

While Jane was being tested by Mrs. Ide at one table, Ethel was tested at another table by Mr. Humpstone. With the Witmer formboard she did much worse than Jane. She used her left hand. Her fingers are long and she has fairly good coordination. In the first trial she put the circle over the square and the square over the circle; the star over the cross and the cross over the star; the diamond over the isosceles triangle; the hexagon over the semicircle. She placed the rectangle, ellipse, and equilateral triangle; laid the semicircle over the diamond, and the isosceles triangle over the hexagon. Then she corrected the circle and square, also the cross and star, and the semicircle, placing the hexagon over the diamond. She placed the isosceles triangle, and put the diamond over the hexagon, trying to force it into the hexagon and the hexagon into the diamond before correcting them. The whole time was 3 min. 36 sec., no final errors, and no instruction given.

On the second trial she confused the triangles with the hexagon and diamond, and corrected them by a method not much better than trial and error. She reduced her time to 2 min. 42 sec. On the third trial she made very few mistakes, and finished correctly in 60-sec. This was her shortest time, but was so long that there is nothing in Dr. Young's results with which to compare it.

With the Witmer cylinders she placed the three largest correctly, then put a cylinder into a socket one size too large for it, and overlooked the mistake. After that she placed only four correctly and had one still unplaced at the end of 10 minutes, when she stopped as if unable to go further. Mr. Humpstone then gave instruction,—"Take out all the blocks that you think are wrong, and put them in the middle."

Ethel removed the wrong placements, and one right one as well. Mr. Humpstone said,—"I will show you where they belong. See that? All right, you put them in where they belong."

Ethel made several changes, and returned to the incorrect placements. Mr. Humpstone suggested again,—"Take out all that are wrong."

Once more Ethel removed all but two wrong ones, which were left projecting. After many changes she had still three small cylinders wrong; then, after a great many more moves she corrected one of these. Mr. Humpstone observed,—"They aren't right yet. There are two that are wrong."

She removed one right and two wrong ones, but succeeded finally in placing all three correctly, finishing the first trial in 17 min. 15 sec.

The second trial proceeded largely by the method of trial and error. After placing all but one cylinder she stopped and took out the wrong placements, apparently remembering the instruction given in the previous trial. When she had all placed excepting four small cylinders, she corrected these by trial and error, even removing an adjacent correct placement to try a wrong cylinder in that socket. When she stopped she had two large cylinders interchanged. Mr. Humpstone asked,—"How do you know when they are all right? How do you tell?"

Ethel pointed at random to several correct ones. Mr. Humpstone continued,—"Now I will show you; those two are not right. No, that one's all right, how do you know it's right?"

Ethel did not answer, except by putting her hand upon the cylinder. She changed the two large ones that were wrong, and finished in a total of 8 minutes.

On the third trial, at the end of 4 minutes she had only three correctly placed. Mr. Humpstone remarked,—"Now I will show you how to tell when it is right. Feel it with your finger" (illustrating with a vibrating movement of the finger on the end of the cylinder). "This one's right, and this one's right, and this one's right, and the rest are not right. Put them back again and get them perfectly smooth."

Ethel completed the test, but the time of this trial was not taken. On the fourth trial she stopped at the end of 4 minutes with two large cylinders wrong, separated by a difference of one. She was unable to correct them until after Mr. Humpstone asked,—"Which are wrong?"

Her performance with the design blocks was likewise much worse than Jane's. In copying with four blocks the pattern having a red square placed diagonally in a white square, she first turned up the right surfaces and placed them at random in a square. After getting three out of the four positions right, she was told,—"You had it pretty nearly right; try again."

She picked up a block in each hand and bumped them down against the table as if exasperated, but failed to correct her design, and had only one right position out of four when she stopped. Mr. Humpstone showed her how to put the pattern together block by block. Ethel separated her blocks, but put them together exactly as before, and kept turning her head to see what Jane was writing on the blackboard.

She named the six colors, red, green, blue, yellow, white, and black. She could not add two blocks and two blocks without counting. She counted listlessly, in a singsong, droning voice, with many mistakes, and smiled up at the examiner in a silly way.

In the second reader she read with such a nasal tone and poor articulation that she was almost unintelligible. She had to be prompted on words of six letters, like *spread*. Usually she omitted the final consonant,—reading "sa" for *shall*, "bone" for *bones*, "can" for *can't*. After reading the fable of the ant who found three pieces of money while sweeping, and decided for various reasons not to buy fish, bread, peaches, corn, or apples with it, but to buy a piece of red ribbon, Ethel's reproduction was as follows,—

Q. What did you read about? A. Ant home, sweep, find some money, buy fish, ant buy.

Q. Did she buy fish? A. Yeh.

Q. What else did she buy, bread? A. Yeh.

Q. And cake? A. Yeh.

Q. And candy, did she buy candy? A. (Ethel shakes her head).

Q. What else did she buy? A. Bread and cake.

Q. And peaches? A. Yeh.

Q. Did she buy tea? Any tea? A. (No answer).

Ethel's auditory memory span, like Jane's, was limited to four digits, but she did not get more than three digits right unless her attention was roused and held by the imperative tone of the examiner. In the first ten trials on four digits she succeeded only once, but later succeeded on several trials in succession. She repeated the digits in a droning voice. The mental examination being completed, and the girls dismissed, Dr. Witmer proceeded to a discussion of these two cases:—

Ethel is fourteen and a half years of age. She came here first in November, 1910, six years ago, when she was only eight years old. She was brought then by her father and mother because she was backward. She started school at six years of age, and at eight years she had been three terms in the first grade. She was sent to us by a Philadelphia physician, a nose and throat specialist. I suppose she had been taken to him for that open mouth of hers. He must have recognized her condition and suggested that she be brought to us here. You see therefore that she has not wanted care.

Ethel was seen at the Psychological Clinic by Dr. Arthur Holmes, and no diagnosis was made, but it was planned to examine her again. For our own scientific satisfaction we ought to have made a diagnosis of this child when we first saw her six years ago, but we were loth to tell her parents.

Miss Kemble met Ethel four years ago, in December, 1912. In the meantime she had been in another special class since the fall of 1911. She had been in Miss Kemble's class since September, 1912, when Miss Kemble took charge of it in December. Then she was very nervous, easily annoyed, irritable, and troublesome. She worried the other children, and didn't seem to have mind enough to find her way home. At five o'clock when Miss Kemble came out of school, she would find Ethel standing leaning against a tree, and would take her home. When asked to read for people she either cries or laughs. Some days she just whines. If a strange teacher takes the class for a day, Ethel cries all day long. She was the worst case in a class of fifteen, excepting one child, a profound idiot, who did not work at all. At present Miss Kemble has eleven pupils. In the four years she has given Ethel a great deal of time.

On Thursday afternoon I was telling my class that a college

instructor in English had tested his freshman class, and found that a large percentage of them could not read. The ability to read words in a second or third reader as Jane and Ethel did this morning, does not constitute the ability to read. A great many of our tests are being applied to supposedly normal people. I once tried the reading test on my class in aesthetics. I gave them a text book on aesthetics by Professor Santayana. Many of them could not read a single paragraph and there was not one of them who could read it all. There are a great many college students who cannot read psychology, and very few indeed can read philosophy. The college instructor I have spoken of said that his students could not read a passage in a newspaper; he did not try them with difficult matter.

That is what causes us to say that low grade imbeciles in Barr's classification cannot learn to read and write. They cannot acquire reading and writing as tools which they can use in their further educational development. They can read and write in parrot fashion perhaps, but even a dog or a horse has been trained to spell. To my mind that is part of the very acceptable definition of a low grade imbecile in Barr's classification, that he is a child who cannot read and write in the proper sense of the word. That is our criterion of low grade imbecility, and when I diagnose these two girls as low grade imbeciles, that is what I mean, that they never could have learned to read and write, and Miss Kemble has proved it in her efforts to teach them. She has got them along to the point where they are able to do a little reading and writing, but what good does it do them? None whatever. It is of no use to them, and never will be.

These two girls are very typical cases. I suppose they represent about the kind of material you get in a special class. They also represent the kind of material that should not be in a special class. Low grade imbeciles ought not to be in a special class. It is undeniable that the public school system makes at least a pretense of teaching reading and writing. In fact it is a fundamental aim of the public school system to teach reading and writing, and therefore these low grade imbeciles as defined from the standpoint of the public school are uneducable cases. The low grade imbecile is below the performance level of the literate. His condition is one of permanent illiteracy. That is what we mean when we say they cannot learn to read and write. If we put these children in Miss Kemble's class, we ask her to teach to read and write, children who by diagnosis we have said cannot be taught to read and write. Here you have the impossible task of educating two uneducable children in a special class.

You may say, it is the function of the public schools to give instruction below the level of reading and writing. Of course, the public school does this in the kindergarten, but it does it theoretically as a preparation for reading and writing, not as a finality in and of itself. If you say it is the public school's task to train children who will remain permanently below the reading and writing level, then I suppose it is the task of the public school to handle children of this type. That brings up the more general question as to what is needful in the training of children of this sort, and without going into detail we can say that institutional training is needful. From the appearance of these two girls they are pretty well cared for. Both have good homes. Jane is able to dress herself, even to arranging her hair and tying her own hair ribbon. She is very tidy about the house, and a good worker in keeping the schoolroom in order. Ethel is able to dress herself, too, and can be sent on errands to the store.

This brings out another thing. It shows you why parents are reluctant to send girls to institutions: their behavior is so well conformed. The feeble-mindedness of these two girls is in the intellectual sphere much more than in the sphere of general behavior, and it is only now, having reached maturity, that they are beginning to cause anxiety. Unless they are very carefully safeguarded, they will both get into trouble. They already show the characteristic sex reactions of the low grade imbecile. They are the type that makes advances, in the sense that their reactions are perfectly unrestrained. In an institution for feeble-minded, the male attendants will never go into the female wards where there are custodial cases, because of the unrestrained sex behavior of the inmates. The feeble-minded male is much more apt to be restrained in institutional life; or perhaps the ones who are decidedly unrestrained get into other institutions where they are under special confinement. In institutions for the feeble-minded, they can allow women to manage the older boys without much trouble, but I don't know any institution in which men do not consider it somewhat dangerous to go unattended into the women's wards. Of course, it is not only what they might do but what they might say in the way of false statements, which adds to the danger.

While we are on the subject, I might as well tell you what I mean by the characteristic sex behavior of these two girls. I asked one of them to show me her hand, and I took her hand. She giggled, and the other one giggled, and she put her finger in her mouth and looked up sidelong,—a perfectly silly reaction. In some situations that would carry a train of consequences with it. Miss Kemble has to watch them closely because there are both boys and girls in

the room, and Jane shows a tendency to be with the boys all the time, and her actions tend to be improper. Both these girls are capable of bearing children. There is an institution at Vineland exclusively for feeble-minded women of child-bearing age. Jane's aunt is a sensible woman and asked Miss Kemble where she could put her, as she feared that harm might come to her. They are in moderate circumstances, and could probably pay something for the girl's care, but not a large amount.

These girls are physically of the type you see in institutions. They even smell feeble-minded to my olfactory sense. I don't know whether others are keen enough to notice that or not. But as soon as you get near either of them, you can tell it, and when you get a lot of them in a ward, you cannot help noticing it. Some of these children don't have the odor, but some of them you can wash as much as you please, and hang their clothes out in the air all day long, and you can't remove it. It is a very distinctive odor, which must accompany the secretions from the sweat glands.

There is another point to be considered. You can see perfectly well what these two girls are: there is not much question about them. The educational test has been made with them, and we know all the aspects of the case. The question is,—what ought we to do, what ought society to do, what ought the State to do? Of course we are agreed that the State ought to have enough institutions to care for all whom we can put in them. Some of my friends are trying to get laws on the statute books to compel mothers who will not place their children in institutions for the feeble-minded, to do so by forcibly dragging the children away from them. I say to these friends,—what is the use of putting such laws on the statute books when we haven't got enough institutions to hold the children whose parents are perfectly willing to put them there? Build an institution outside of Philadelphia to hold a thousand children, and it will be filled inside of three months. Why make compulsory laws to put children into institutions, when we haven't the institutions in which to put them?

In the second place, we can speak of a further duty which society owes to itself, and that is to prevent these children having more children. There are only two ways to prevent it. One of them is permanent segregation in an institution. You may not know it, but I don't think any children can be held permanently in this state. Of course, one of the elementary rights we have is the right of *habeas corpus*. At any time we ought to be able to employ that to review a case, but if a parent like this aunt,

for instance, is willing and able to support this girl at home, then if you are not able to show that she is running the streets and visiting houses of ill repute, if you cannot prove against her immoral conduct and some kind of neglect on the part of the parents or guardians, I do not think you can keep the child away from her. Now society might step in here and say,—if this girl is well behaved in the home, assists in the housework, and is happier at home, as I think this girl is, she may stay there on one condition. If I were a relative of these people I doubt very much if I would want this girl sent to Spring City. I don't like the looks of Spring City, and I don't like Elwyn very much either. In certain cases, I recommend them as good places to send children, but here you have a girl nicely dressed and well cared for, getting on well at home where the surroundings are apparently agreeable.

Now the alternative for society is an operative ligature of the ovarian ducts,—castration. That is technically a major operation, because it means going into the abdominal cavity, but it is not a serious operation. In the male it is not even a major operation, and is very easily performed. If the State is unable to provide for the permanent custody of these children, and the family is unwilling to permit the State to make such provision and remove the children from the custody of the family, the State ought to step in and insist upon an operation. From the scientific point of view I think it ought to be done, and I urge upon parents to have such an operation performed. But science has not been very successful as yet in getting the community aroused to the point where this operation can be performed without the consent of the parents, and the question we have to consider at the present time is,—is it worth while to stir up the community? In cases like these two girls, is the community ready to have the operation performed against the wish of the parents? Both these girls you would say come of fairly good families, the kind of families which form the solid part of the electorate in this state, and of course what they say right away if you talk about putting such laws on the statute books is,—would we be willing to have it done to Jane or Ethel? They see the thing in a personal light and most probably in its application to some one case of this kind. I suppose everybody would decide this as a personal reaction. When you are putting this before the people of a community, you want to get them to act, and I think you are much more likely to get people to consent to an operation in cases of this kind than you are to consent to permanent segregation. In fact, I don't quite see how you can make the segregation permanent. Sooner or later these people are going around until they find a judge who will

let these girls out. Under our system of laws that is bound to happen. In New York State they commit feeble-minded women until they are fifty years old, but they are frequently taken out on *habeas corpus* proceedings, or dismissed by a board of trustees. They will let out a case which threatens to give trouble, rather than have a test case come up before the Supreme Court and have the laws providing for commitment declared unconstitutional. In order to keep the laws in force, they have to let some cases go. Moreover, the girls often run away from institutions, and if the girls are difficult to manage they don't try very hard to get them back. It is also difficult to keep men from hanging around the institutions and enticing girls away. In Washington I am told they commit for life with the consent of the parents,—once in they cannot get out, and a test case has never yet come up before the courts.

With regard to this operation, even if you could get it put on the statute books, as they have done in a few states in the middle west, the law cannot be enforced except in a very few cases. At the House of Detention here in Philadelphia, cases are not recommended for this operation. Even ordinary medical attention, such as removal of tonsils and adenoids, is not given without the consent of the parents. In Chicago the parents are compelled to sign a card giving consent if the child needs medical attention.

In the case of institutional care, children are not sent by the Juvenile Court to institutions with the consent of the parents. The question is always as between custody by the parents and custody by some society like the Juvenile Aid or the S.P.C.C. The society in turn may commit a child to an institution. The only exception is the House of Refuge, which is a semi-penal institution, where children may be sent until they are twenty-one years of age. Certain facts having been ascertained, the Court, for the good of the child, removes him from the guardianship of his parents and places him in the guardianship of the State through the institution known as the House of Refuge. Then the managers of the House of Refuge place that child at Glen Mills, if he is a boy, and keep him there usually not more than two years, and then let him out on probation. They might keep him only six months, or only a day or an hour, if they chose, or they might keep him there until he is twenty-one years old. The technical form is that there is a change in guardianship, and not commitment to an institution; so that if an action to review the case should come up, as to whether the boy had been cruelly treated at the House of Refuge, and so on, it isn't like the question as to whether the inmate of a prison had been cruelly treated, it is a question of guardianship. The House of Refuge is

one guardian, and the other is the parent who has been deprived of his guardianship on account of certain facts.

That gives us the clue to the treatment of feeble-mindedness. I believe the campaign that we should wage throughout the state is that the parent is not the proper guardian of children like these. That is the better way to proceed, rather than talk so much about the menace to society. In the case of such children, owing to the fact that the parents are not acquainted with the phenomena of feeble-mindedness, they are unable to handle a feeble-minded child. It is a necessary condition of the treatment of feeble-minded persons, adult or infant, to be under the technical guardianship of the State. Then let the State decide whether the child should remain with its parents or not. Something like that has been achieved in Germany in the compulsory education act. A child must be getting an education somewhere, must be accounted for during the school-going period. If he goes to school, and it is discovered that he is feeble-minded, the question then is, is he being educated? The State makes a demand on the parent,—is he being educated in some private institution, or has he got a private tutor at home? If not, he must go to an institution for feeble-minded to be educated. There the State is the guardian of the education of the child and can come to any parent and ask that parent whether the child is really being educated. We might take hold of these children, these girls for instance when they are younger, these children in classes for backward children, and ask the public school,—does it make provision for these children? Adequate provision must be accompanied by custodial care. Therefore they ought to be in some sort of institution.

CLINIC REPORTS.

THREE CASES.

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I.

Ruth's father recognized that she belonged in an institution, and asked the assistance of a physician in having her placed. He referred her to the social service department of a hospital, which in turn sent her to the Psychological Clinic. She was brought by her mother and another woman who served as interpreter.

Absolutely no history of any kind was brought out that might explain feeble-mindedness. The families are healthy mentally and physically, while two older and several younger children are apparently normal. The parents were in good condition prior to her birth, and Ruth herself has had no illnesses that might be considered as causative.

By the time she was three years of age, her parents noticed that she was dull. She was a little slow in walking, very slow in learning to talk, was late in teething, and even now, at eight and a half years, has her first teeth with no signs of the second set. Her failure to attend to her needs was one of the first things noticed, but now she can care for herself at toilet. It is claimed by the mother that she can dress herself, though her slowness in buttoning a test frame would cause us to doubt that she can dress without assistance.

During the past year and eight months she has been in a special class, but has made no progress and gives trouble by biting other children. She has not learned to talk, except to use a few words in an almost unintelligible way. She has been in this country only a little over two years, it is true, but she should have made some progress in that time. Her play while under observation at the Clinic was not that of a normal child of three years. She twisted the arms and legs of a toy bear, and plucked at its eyes. She was very shy, and had a smile and expression of the eyes which were those of feeble-mindedness rather than of shyness.

Ruth is microcephalic, the head girth being below the low frequency for five year old girls, and her cephalic index is unusually high, being 86.

In her performance of mental tests the deficiency was particularly marked, the mental age on the Binet-Simon scale being less than three years. The only successful performances were placing the equal Seguin circles, and buttoning a Montessori frame, things which can be done by a two year old child. Attempts to educate her in the placing of a block in the Witmer formboard were a total failure; this is a thing which a normal child of eighteen months can be taught to do.

The diagnosis was superficial idiocy, congenital in origin, and permanent institutional care was recommended, though because she is not educable it is doubtful whether she would be received at any other place than the Philadelphia Hospital.

This case serves to demonstrate the value of the Witmer formboard as a didactic device in the determination of the level of feeble-mindedness. The

square was handed her and she attempted to place it in the circular recess. She was shown where it went, and put it away. It was immediately given to her again, and she once more tried it in the circle, and succeeded in placing it in the square only when told exactly where to put it. This was done seventeen times with no modification in the results.

II.

A troublesome boy of eleven was brought by his mother at the suggestion of a social worker who had visited his home. Clarence is uncontrollable at home, defiant in school, and is continually fighting. The mother declares that other children and neighbors think him "dumb" and that his teacher says he "acts dumb" in school.

He is the fifth child of a family of eight, of which six are living. The father died of tuberculosis, as did an older brother of Clarence. A younger sister is now tubercular. Another brother has been in the University Hospital for the last year, with spinal tuberculosis. The mother is quite healthy. The parents, Russian Jews, came to this country about six years ago.

Clarence is now in good health, although he has a lengthy medical history. He has had a hernia operation and a broken leg, besides measles and whooping-cough.

His pedagogical history has not been satisfactory. Three times he has been held back, but the reasons for this we could not discover. It seems that his illnesses and accidents have been mainly responsible. He seems to get along rather well when he is willing to work, but he is a serious problem from the disciplinary standpoint in the schoolroom. More information about the school history is desired, as the mother does not seem to be a good witness. Her use of English is somewhat limited, and her attitude toward the boy is far from the best.

The mental examination showed him to be of normal mentality, little below the average for his age.

The child's difficulty seems to be the presence of conflicts. For one thing, Clarence has become Americanised much more rapidly than his mother. He does not want to talk to her in Yiddish, the language of the home, and they frequently have wordy arguments. During the examination, when one test was particularly well passed, the mother interposed, "Yes, you will do that for him, but when you are at home you are as dumb as you can be." The mother seems like a capable woman, for she has managed a grocery store not her own, and has supported her family of six children with some assistance from the two older girls. Nevertheless, she does not know how to handle this boy. It is not improbable that the trouble at school is of a somewhat similar nature. He claims that he had satisfactory marks for conduct until he changed schools this year, and that he enjoyed the work in his former school, but now, "All they do is reading work all day." He hates the Italian boys in the class, and is continually getting into fights with them.

This is the sort of case in which the Big Brother Movement is efficacious. Unless someone can gain control of Clarence, he will leave school as soon as he legally can, and may run away from home before that.

III.

Peter is a fat, clumsy boy of five and a half years, so overgrown that he has the maximum height for a boy of seven, the maximum weight for a boy of ten, and the head girth of the average boy of fourteen. He has very poor muscular

coordination, walks with a waddling gait, can step upward only when assisted, and also has poor control of the finer coordinations. He began to grow fat from his second year. Before that no abnormalities had been noticed. He was brought by a teacher in the kindergarten of a Deaconess Home, because his inability to make progress had given rise to a suspicion of mental deficiency.

His conduct is excellent. He is a very pleasant little fellow who tries to do as he is told, so far as he can understand, and he gets along well with other children, even at the expense of being imposed upon.

Peter's language is very meagre; he uses few words and pronounces them indistinctly. Slavish is talked in the home, but less than English, and the boy speaks English only, refusing to answer his parents in Slavish. The parents are foreigners, and both work at poorly paid occupations. The mother, a native of Galicia, is said to be a bright, capable woman. None of the ancestors, she says, were excessively fat. There was one older child who died as a result of fatty heart, having developed this condition at the age of two.

The mental examination showed that at the present time Peter's mental status is not above the level of a low grade imbecile. By the Binet tests he has a mental age of three and a half years.

Because of the physical aspects of the case, the boy was sent to Dr. Ludlum, who declared that his fatness suggested a tendency to acromegaly, and that he gave a rather myxoedematous picture. He recommended thyroid treatment for a period of one month.

NEWS AND COMMENT.

Visiting Teachers.

Last July, in conjunction with the National Education Association, the first national conference of visiting teachers was held in New York City. A report on "The Visiting Teacher in New York City," compiled by Miss Harriet M. Johnson, was presented to the conference and has recently been issued as a pamphlet of one hundred pages, by the Public Education Association. That association employs nine visiting teachers and the Board of Education has seven more, under the general supervision of Associate Superintendent Edson.

Visiting teacher service has not been confined to New York City, where it was started some ten years ago by Miss Mary Marot. In Boston the work was begun about the same time, and there are now seventeen home and school visitors who work in connection with settlements or other private organizations. Meanwhile the movement has spread to other cities. In Rochester and Mount Vernon, N. Y., in Springfield, Mass., and in Montclair, N. J., the departments of education have introduced it; while in Philadelphia, Hartford, Baltimore, Columbus, O., and Chicago, the visiting is carried on under the direction of psychological clinics, parents' associations, and other welfare agencies.

The report presented by Miss Johnson is the third issued by the association. The first, by Mrs. Nathalie Henderson Swan, was published by the city superintendent of schools in his thirteenth annual report. The second, by Miss Mary Flexner, appeared in 1913 as bulletin number 15 of the association. From the beginning the movement has had the hearty support of Superintendent Maxwell, and also of the principals and teachers in the schools in which the work has been conducted.

"The visiting teacher experiment was undertaken," says Mrs. Swan in her preface to Miss Johnson's report, "in the belief that if the school could extend its reach into the homes of the children, better citizens could be developed, many failures prevented, and future expenditures thereby saved to New York City. When a child grows up to be a public charge or falls below his or her possibilities as a citizen, whether the failure be attributable to the school because it did not meet his needs, or to adverse conditions in the home, the State suffers as well as the individual and it is the State that pays the cost. The State, therefore, in the interest of its own future and for the sake of economy, must adapt its instrument, the school, to meet the problem of these failures. The visiting teacher is the arm of the school extended into the home to draw the school and the home together for the benefit of the child. . . . The training of the visiting teacher differs from that of other members of the school staff. She must have had experience in social work in New York City, as well as experience in teaching. She must understand the characteristics and prejudices of the people among whom she works. She must have the power to deal effectively with adults as well as with children. . . . The visiting teacher explains the aims of the school concretely to the parents, and gaining their cooperation wherever possible, makes whatever changes and adjustments are necessary in the home in order that the

child may gain the full benefit of his school training. She also explains the home situation in detail to the teacher, so that the child is individualized, however large the class. She reports to the principal the gaps and dangers in the child's surroundings which it is necessary for the school to supplement and meet. She thus stimulates cooperation between the home and the school. . . . She not only knows the individual families, but she knows the social and industrial life of the district, which knowledge, combined with her experience in teaching, enables her to help the principal in adapting the school to the needs of the neighborhood."

Following Mrs. Swan's introduction, Miss Johnson takes up the discussion of the topic. "There is a group of pupils," she remarks, "who seem unable to take their training in wholesale fashion, but need more individualized treatment. They are below standard in scholarship without belonging to the mentally sub-normal class, they are difficult in conduct without being disciplinary cases, and though they avoid truancy they are not in constant attendance. . . . In the course of dealing with the children under her care, the visiting teacher makes an informal survey of the neighborhood where her school is located, asking herself such questions as the following: Of what nationality is the neighborhood made up, and what in general is the standard of living and of education? What are the types of dwelling? What industries employ the fathers and mothers of the school children and do they also employ child labor? What play opportunities does the neighborhood present in its parks and playgrounds, its churches or settlements? What agencies exist there that offer additional educational advantages to the children and what special experiments are being made in the regular schools to meet the problems of the exceptional children? Are there trade, high, vocational or continuation schools which can be used? What societies are available for relief, correction, or medical assistance?"

A facsimile of the record form used by the visiting teacher is shown, with a typical case record filled out. "Its form is that of a sheet folded to 5 x 8 filing size. For field work it is carried in a loose leaf book. . . . At the termination of work on a case it is filed in a 5 x 8 cabinet and serves as a folder holding supplementary history sheets or correspondence. . . . Such a record form," comments Miss Johnson, "must be regarded as a useful adaptable instrument, not as a measuring rod for each case. . . . It forms a very suggestive guide for a visitor beginning the work, and . . . is a most valuable means of estimating the efficiency and the resourcefulness of the members of the staff."

In several tables the reasons for referring children to the visiting teacher are analyzed, and also their age-grade distribution, nativity, physical condition, and economic status. The most effective measures of treatment are discussed, and a few specimen cases are summarized.

"The children who impress their teachers as needing special care," Miss Johnson concludes, "are chiefly recruited from the ranks of over-age and retarded children, the majority of whom come from homes in which conditions are socially or economically adverse. A very large proportion of them have some physical defect, ranging in seriousness from dental trouble to heart disease; . . . it is very probable that the visiting teachers' percentage is no larger than that of the total school population."

"The next step forward," she believes will be, "the organization of social activities in a department of Social Service which shall be a recognized feature of each school. . . . Such a plan will eventually mean changes in organization, in the opportunities for social training offered by colleges and training schools and in the requirements demanded by those teachers seeking administrative positions in the school system, which, for a long time, educators have been advocating and toward which the educational systems of the country have been moving."

Religious Education and the Coming Social Order.

Educators and religious leaders will get together to discuss the religious significance of the present world struggle in the convention of the Religious Education Association which meets in Fourteenth General Convention, Boston, February 27 to March 1, 1917.

The convention will take up the theme "Religious Education and the Coming Social Order." The program is planned to face the question: How should youth be trained to meet the needs and demands of the great changes that are sure to follow the world war? It is therefore a convention on preparedness, not by armament but by education. The association is an international organization; it has members in all the warring countries and it is expected that the attendance will represent many nations.

The speakers at the convention include representative persons of many churches and schools, such as Bishop Francis J. McConnell, President William Douglas Mackenzie, Rabbi William H. Friedman, Governor McCall, of Massachusetts, President John H. Finley, Rev. Dr. Howard Melish, Prof. Edward C. Moore, Dr. Katsuiji Kato, of Japan, Prof. W. J. Davidson, Prof. J. E. Keeler, Texas, Prof. Theodore G. Soares, Chicago, Dr. Richard Cabot, Boston, Dr. Abraham W. Ribbany, Rabbi Henry Levi, and other distinguished men and women to a total of over one hundred. Organizations representing the college, theological seminaries, churches, Sunday schools, public schools, private schools, Y. M. C. A. and Y. W. C. A., family life, art, and social movements will have their own programs. Commissions which have been working for a year or more on special investigations, problems and plans of work will present their reports. Some of the most important of these have to do with the reorganization of church work on an educational basis. Altogether there will be about thirty-two meetings open to the public. Programs will be sent on request, as they are issued by The Religious Education Association, 332 So. Michigan Avenue, Chicago, Ill.

The Psychological Clinic

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A FETTERED MIND.

BY LIGHTNER WITMER, PH.D.,
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I recall my first impression of Marie,—a small slight figure with prominent shoulder blades, the muscles of her face contracting and twitching constantly, the eyes rolling back, the mouth drooling, the feet dragging as she walked. The hands were never quiet, the whole frame in fact appearing to be strung on wires,—wires which were hopelessly tangled and crossed. Her speech was almost unintelligible, thick and indistinct, and she seemed to understand nothing of what was going on around her,—constantly saying, "What? What was it?" in a puzzled way to her aunt and mother. In consultation with a neurologist of New York City I first examined this little girl when she was just seven years old. She was the fourth and last child of parents who had reached the age when they ceased to expect an addition to the family. Her mother was forty-two, and was ill before Marie's birth with what was diagnosed as kidney trouble. She was too ill to nurse the child, who was nourished on prepared foods under the direction of the family physician.

Three older children were all of normal mental and physical development, but Marie, from the time of her birth, had been afflicted with what several specialists diagnosed as an incurable disease. At the age of one year she could not crawl or even move from the reclining position. When placed upon her belly on the floor she could move her arms and legs about, but she was incapable of coördinate progression. At the age of twenty-six months she began to walk without having previously crawled. Somewhat later she began to talk. Her intentional movements had always been incoördinate. The mother called her nervous and spoke of the child having jerking and tremulous movements. The severity of her symptoms may be judged from the fact that when about three years of age a specialist on children's diseases diagnosed her condition as dystrophy. This naturally involved an extremely unfavorable prognosis.

At about the same time a neurologist diagnosed the case tentatively as infantile cerebral palsy. The condition of her motor system is shown by the fact that she could not walk upstairs without holding on to the banisters, that she stumbled easily, that she could not help herself to rise if she lay on her back. If rolled over on her belly and lifted gently by putting a hand under the abdomen she got up. There was nothing in this that suggested dystrophy. The leg muscles were well developed, but not hypertrophied; the knee jerks normal; the pupils responded normally. Her eyes were Mongolian, the internal canthus being adherent. Rickets was excluded in the diagnosis.

The child had always suffered from constipation. She was tall for her age, and her parents thought her mentally up to the other children who have all been normal.

Marie was seen again by the neurologist six months before my first examination. The most important symptoms then were the choreiform movements, and the over-activity of purposive movements. In the four years she had been given exercises under the neurologist's direction, looking to the removal of the incoördination. She could walk up and down stairs. She even skipped a little. There was no pronounced spasticity in her gait, but rather an over-activity of the muscles. When the limbs were tested separately, there was no spasticity apparent. The symptoms were much worse when the child was tired or excited. A few months later she was again brought to the neurologist, after she had been taken to one of the most distinguished physicians in this country, who pronounced her case a hopeless one and advised that very little could be done for her.

At the time of my examination Marie possessed a fairly well formed body; her head was normal in formation, the face slightly asymmetrical, the right side being *plus*. The physiognomy suggested adenoids, and the palate was high, the teeth irregular. The mother admitted that the child was susceptible to colds, but denied that she had ever been a mouth breather, even at night. There had been no ear symptoms.

She was able to stand erect, and to take the normal sitting posture. There was manifest awkwardness in her gait. The hip joints, and to a somewhat less extent, the knee joints appeared to be stiff. The toes turned in badly. There was no true spasticity, either in intentional walking or in the manipulation of the limbs. In walking, the arms made an associated flail-like movement, being bent at the elbow and the hands moving about on the fore-arms, approximating the horizontal position. She could pick up a coin

with the right or left hand, but she had trouble in picking up three coins at a time with one hand. Her coördination was very imperfect, and was associated with excessive flexor movements. When asked to extend the arms in front of her with the fingers fully extended, the arms were held out fairly straight, but the back of the hand was overextended and the fingers flexed and spread apart. When the hands were supported complete extension was possible. The incoördination appeared only on intentional innervation of the arm muscles.

Associated with all her movements, even present when the child was seated, were contractures of the facial muscles, producing a continual grimacing. She was able, however, to sit quietly, and at these times the movements almost disappeared. The mother claimed that when sitting at table the most that she observed was a nodding motion of the head.

Marie's articulation was very imperfect, slurred and rapid. Her voice was weak and rather toneless. All vowels and consonants were more or less affected, but even in my first examination she was able to repeat by imitation most of the articulate elements of the English language. She was unable to narrate the simplest occurrence in coherent form; *she* was invariably substituted for *he*, many words were left out and connecting links in the narrative were apt to be missing. At home she was treated in many ways like a baby; everything was done for her and nothing but obedience was exacted in return. She was entirely untaught, but she knew money, could count to twelve, and subtract one and two from numbers up to ten. She did not know her letters, or how to read.

To the trainer who was sent into Marie's home, the task seemed indeed Herculean. How could this strange, incoherent, grimacing, stumbling child be helped, altered, made? For if the training was to be successful she had to be remade; it must be a new birth, only to be attained after months of painful effort on the child's part, of endless tact and patience on that of the trainer. The treatment suggested was examination of the eyes, and of the naso-pharynx for adenoids. The following corrective measures were prescribed: (1) diet, baths, and general hygienic rules of life and exercise; (2) special training (a) to produce a quiescence of the over-active muscles, (b) to produce intentional movements without associated movements, (c) to confine the essential motor activity to the performance of simple tasks, walking, and running, and stop the involuntary movements of the face and tongue; (3) articulation exercises; and (4) the beginning of mental training, teaching the letters and simple problems in addition, subtraction, etc., in conjunction with the articulatory exercises.

Care was taken to guard against over-exertion. It seemed to me that at the beginning Marie could stand little more than a few minutes of work with any intense application of attention. Two kinds of exercise were therefore recommended: (1) those in which the child was required to give a maximum of attention and was held rigidly to an assigned task. These were to be performed at frequent intervals during the day. The intermission and frequency of such exercises were to depend upon the observation of signs of fatigue in the child. (2) Free exercise in the form of games and play in which the child's attention was relaxed or was gained through interest and held without effort.

Three years from the date of the trainer's entrance on the work, she and the child lunched with me at my home. That day the contractions of the face were not present (though at some other times they persisted). This enabled one to appreciate the beauty of the soft, fair hair, the dark blue eyes, and darker lashes, the delicate contour of the little face. She was the life of the party. Her enunciation, quite clear and distinct, was easy to follow while she told anecdotes of a recent wedding in the family at which she had been present—anecdotes which revealed unusual quickness of observation, insight and humor. She handled her knife and fork well in spite of the fact that at times the contractions and jerks in the arms were very noticeable. Her mind was alive, she heard and understood all that was said, laughed gleefully at the little jokes, and added her quota with keen delight. After luncheon she rested on the couch and at my request she dictated to Mrs. Witmer the following anecdote, one of a number which had greatly entertained us at table and which I desired, if possible, to get word for word as she told them. She interrupted her narrative at intervals to interject special directions or remarks which I will put in parentheses.

"I suppose you know who Mr. and Mrs. Black are. Well, they always ask me if I am glad to go home or if I like the place I am in. The other day at table Mrs. Black asked me, 'Are you glad to go to Atlantic City, Marie?' (Spell it without the a; she always pronounces it M'rie.) I said, 'Yes, but there is some other place I want more to go to.' 'Where?' she asked. 'To Philadelphia, to see Caterina,' I answered. She looked at Mother with an inquiring gaze, and Mother answered, 'She becomes very much attached to everybody who is with her and is *nice* to her.' (Please underline *nice*!) I said, with a spark in my eye (Is that too fancy?) 'Caterina is not *everybody*.' (Please underline *everybody*.) And I did not speak to her nor look that way through the meal. After dinner, I said, 'Mother, I want to speak to you in private about that *everybody*.'

When I got her alone I said, 'I want you to understand that Caterina is not everybody.' 'Who is nice to you, I said,' repeated Mother, 'I wouldn't like you if you were not that way.' 'Everybody?' I repeated. 'Oh, well, it is taken for granted you would be with nice people,' protested Mother. 'That may all be, but if you think you can take Caterina away from me and that I will be just as happy with some one else, you will be very much mistaken.' 'What would you do if Caterina married?' Mother asked. I said, 'Caterina is not a hired girl to marry and let me go out of her life.' "

Later when she went down town with the trainer, her walk was like any other child's and in the street car she attracted no attention whatever. Apparently she had only a step to take to join the ranks of normal children. Little of her former self remained, except the muscular contractions, and these varied with her physical and nervous condition.

By what process was this metamorphosis attained? How had it been accomplished? Against what odds? Imprisoned within this jerking, delicate little body, cut off from all the joys of childhood, there was a mind which for seven years had waited to be set free. And bit by bit, tearing down here, building there, strengthening, replacing old with new, the trainer under my direction had rebuilt the house, let in the doors and windows, set free the imprisoned ego, —and to her surprise and delight this ego was artistic, fanciful, imaginative, humorous, charming.

The first year the greater part of the time was devoted to articulation, and to exercises for improving the gait. These would have been practically valueless without the correction of each step taken and of each word uttered. It was through countless commands of "Lift your feet, turn them out. I do not hear you; say it again plainly," that after three months a slight but distinct improvement was manifest. Very soon she was able to articulate all sounds with the exception of *ng* and *th*, but these she mastered in six months. From the beginning the trainer taught her singing, and it proved of the greatest value. It was found that she could articulate correctly; it was combining sounds which proved most difficult. The drill therefore was on sentences, or verses, and she had to repeat one line at a time after the trainer. It must be remembered that all the time she had allied against her the motor disturbances of face and limbs, and her extreme frailty, which prevented the lessons being longer than a few minutes at a time—then rest, or play, then another lesson. It is not to be wondered at that at first, though very sweet tempered, the child rebelled over and over against the constant battering at formed habits, against the deadly tedium

of correction. This showed itself in bursts of tears, in tearing and clawing at the trainer's clothes like a small enraged animal. Three years later she was able to talk to the trainer about this period and confessed that then she hated one whom later she learned to adore. Very soon she was taught to play cribbage, and this alternated with her work in articulation and later in writing, as it proved a pleasant way to introduce a little arithmetic.

After a year's work, the gait was much better as a whole though there were lapses owing to bodily weakness. Dancing was begun with good result. She was taught the simpler fancy dancing with arm as well as leg movements. The rolling back of the eyes had almost ceased, and the enunciation at its best was understandable. She had learned to use her voice in the singing of scales and old French nursery songs. In the beginning she could not even control it sufficiently to call any one's name so that the sound would carry. She was taught French as part of her articulation work, for the value of its lip training and also with the idea that in a new language she would not have the old speech habits to combat, and this supposition proved correct. She learned to read a little French, her accent being unusually good.

Adenoids had been discovered when the child was two years old but the mother had refused to have them removed. It was only through my insistence after she had been in my care for two years that it was finally decided upon. The surgeon who removed the tonsils as well as the adenoids is reported as saying that it was one of the worse cases he ever operated on. No immediate effects of the operation were observed but the following winter was the best she had ever had.

Marie was bored with the toys most children love. This was especially true of dolls. When the trainer arrived she found Marie's chief pleasure and excitement had been in dressing up. She never wearied of it, and when one of the little girls of the neighborhood came to play with her, she pressed her into the game also. There were several reasons why the trainer thought it wise to discourage an excess in this one direction. It was always rather exhausting, and left the child over-tired; then all her peculiarities of look and manner seemed to be accentuated by the silks and laces and ribbons in which she was decked, and it was thought best to limit this indulgence to once a week. Instead, the trainer encouraged the dramatic instinct dormant in the child by telling her fairy tales. Then, when these palled—principally it appeared because "they lived happily ever after"—she read aloud Charles and Mary Lamb's

"Tales from Shakespeare." Here certainly there was no surfeit of happy endings, especially as Hamlet, and Romeo and Juliet were the favorites, and were called for again and again. The quarrel between the two great Houses made a deep impression. It was straightway related to the cook—a firm ally—who must have thrown new light on it, for the next question to greet the trainer was—"Didn't you say Juliet was a cantaloupe? Well it commences with a K anyhow." She learned by heart parts of these two tragedies and the contrast between the frail, shaken, little figure and the force she threw into such lines as, "As thou'rt a man, give me the cup; let go, by Heaven, I'll have it," made the recitals memorable. This dramatic appreciation was shown also in her drawings, which made up in boldness of conception what they lacked in correctness of line. The small trembling fingers had always loved to draw, the sense of color being extraordinarily good, and most of the stories told were forthwith illustrated on paper with colored crayons. Even at the time of the trainer's advent the child could pick out in a moment not only every separate color but could differentiate between a pink lilac and a blue lilac and other delicate gradations of tone.

After Shakespeare's tales, came the stories of the operas, German and Italian, which the trainer told with as few necessary changes as possible. The stories of the German operas took the strongest hold on her imagination and were each illustrated in turn. The meeting of Vanderdecken and Senta was especially beloved and on this she tried her hand again and again. A phonograph and a player-piano which she pedalled herself made many of the leading motifs familiar. Thus, little by little through these various channels, there came to the child, light, color, music, people who did and said interesting things, a new and fascinating world.

In the fall of the second year she was practically unable to read, but only one year later she was reading "Cranford" aloud to her trainer, and laughing at Miss Mattie and Miss Deborah. Sewing she loved. She would outline patterns in various colored silks, sometimes, owing to the motor disturbances, making ten trials before she finally hit the right spot with her needle.

These muscular contractions were a subject of much thought and discussion between her and the trainer. They were known familiarly as the "gorgons" and it was understood that as far as it lay in her power they must be fought and ultimately conquered. In time the child herself entered intelligently into the work with a better understanding of what the struggle meant to her.

Marie differed more from other children in her mental life than

in her outward appearance. In Scotland she would have been called an "innocent," and here probably was the key to her unlikeness. For the little girls of her own age who came and went were in no sense innocents. They were their mothers, aunts, grown sisters in miniature with the standards of the little town in which they lived. Beside them Marie shone out as one who knew no evil, lived in a dream world, loving, unselfish, tender hearted. Take an instance of these early days. The trainer had been painting her a future of glorious color, the reward of her patience under the rigorous training. "And what will you be doing, Caterina"? "I do not know. Does it matter"? "Why, yes"—a little shyly—"I want you to be happy too."

Up to the end of the first year of training, Marie had rarely, if ever, gone through the process known as thinking. All that the child's clouded mind could grasp had been instantly retailed to the family or servants. It seemed to the trainer that to make Marie distinguish what ought to be and what ought not to be repeated was in the nature of an intellectual exercise, and had a marked educational value. Therefore in their daily intercourse this discrimination was exacted, with the result that by the end of two years the trainer found herself out-distanced in the difficult art of discreet repetition.

Marie had always been subject to outbursts of weeping which left her exhausted. Her family had taken the attitude that when these fits of crying were over, the child was to be praised and petted, and given something she liked as a reward for stopping. The trainer attacked these emotional out-breaks at once, and used very different methods. The tears were referred to as "turning on the water works," and in time Marie was made to see that the injured person was not herself but her teacher. She grew to take pride in narrating how she had fought and conquered one of these fits of crying. When left alone with her family for several months, this emotional weakness would reappear, together with other bad habits which were held in check by the trainer's influence and watchful care.

Marie never saw anything as she walked along the street, never in her own house heard any of the conversation which went on around her. When questioned on these points, she said, "I seem to be off somewhere." As soon as her gait had been noticeably improved, she was taught to bow to the people on the street who spoke to her, and to notice persons and objects on the road.

In the beginning of the third and as it happened, the last year of training she was taken to a well known aurist who pronounced her hearing defective. This accounted in some measure for her inabil-

ity to take in general conversation, and also for her constant "What? What was it?" After her deafness was known, the trainer always spoke very distinctly but never repeated her remarks or answered the child's frequent "What?" In spite of this Marie could invariably repeat what had been said to her, showing that inattention and absent-mindedness played a large part in her failure to comprehend. She ceased in time to say "What?" to her trainer, finding it useless, but in her intercourse with her family it was constantly on her lips. She included these petitions in her morning and evening prayers,—
"To speak plainly, to be as quiet as possible, to pay attention to what goes on around me, to sit up straight and be brisk." The "quiet" referred of course to the motor disturbances. She had always been allowed an indefinite time to make up her mind about anything. This had grown into a torpidity of thought, hence the petition to be "brisk". She understood that it was her thought and not her body which was being hurried up.

By the following spring it had become increasingly evident that the work could not go on much further under the existing conditions. The child's family were holding her back, through ignorance as to the physical requirements in the case, as well as through inability to grasp the value of the work and to assist in its progress.

The proposal was therefore made to them that they should allow the child to come to Philadelphia with her trainer and be under my direct supervision and in the care of certain physicians for a trial experiment of six months. This they absolutely refused to do and I was therefore reluctantly compelled to give up the case and recall the trainer.

RETARDED SCHOOL CHILDREN IN MADISON WISCONSIN.

BY SMILEY BLANTON, M.D.,
University of Wisconsin.

The ordinary school curriculum taught by a teacher of average skill and patience is probably as good a test of a child's mental ability as the Binet-Simon and similar mental tests. The curriculum tests the child's mental capacity in a vital way: memory, attention, abstract reasoning are all used in mastering the various subjects. The argument that the ordinary school does not fit the child for life and does not give him a useful training has no bearing on the point in question—the ability of the school work to test the child's mental capacity. The point is that the great majority of children are able to learn in a certain length of time a certain minimum proportion of the subjects which they have to study while in school. There is, however, in every school system a small percentage of children who either cannot learn at all this minimum amount of what is being taught them, or they take twice or more the amount of time required by the average. David Mitchell,¹ in his report of the survey of the Cleveland schools, says that all such children, three or more years behind their grade, may be considered suspects and Goddard's² experience teaches that when these suspects are carefully examined at least two-thirds of them will be found to be feeble-minded. Again, he says³ that the child who gets three years behind has, as a rule, stopped development and seldom progresses appreciably beyond that point.

METHOD OF PROCEDURE.

It is usually conceded by educators that when a child is three years behind his grade *without good reason*, there is something seriously wrong. It is obvious, however, that there are many children several years behind their grades with good reason and who are not in the least dull and backward. There are doubtless people in this country with brilliant minds who cannot pass the second grade, because they never had the chance to go to school. It would be

¹ Mitchell, David. *Schools and Classes for Exceptional Children*. Survey Committee of the Cleveland Foundation, 1916.

² Goddard, H. H. *Journal of Educational Psychology*, May, 1916, p. 268.

³ *Ibid.*, p. 291.

absurd to assume, for example, that an illiterate Southern mountaineer lacked mental ability because he could not read or write. From this survey was excluded every child who was backward from any good reason and all those who were behind their grades:

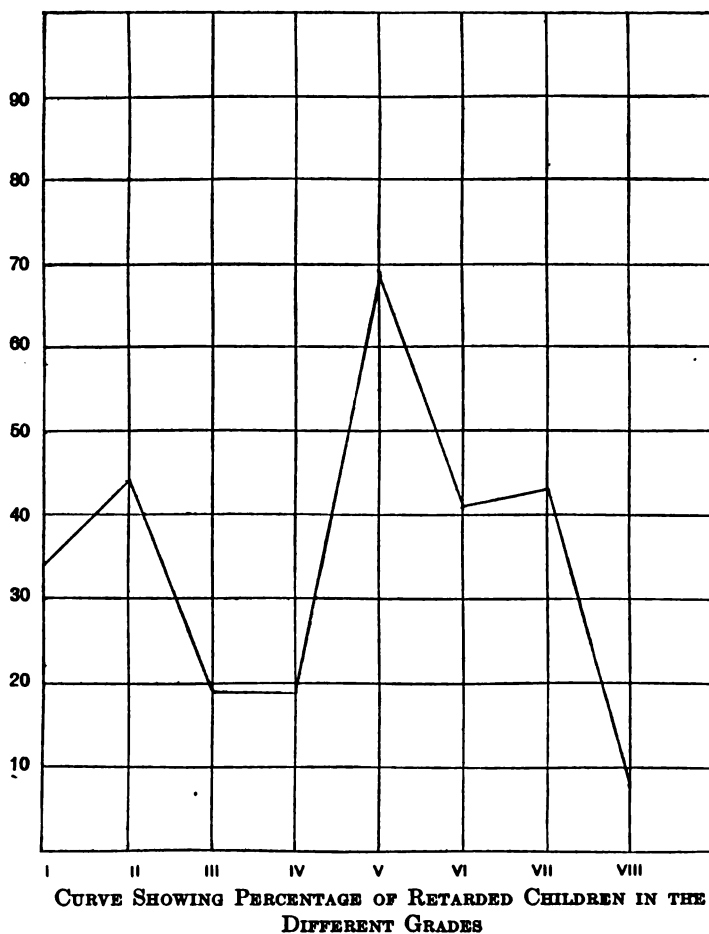
1. Because of absence from school due to illness.
2. Because they had lived in the country where school facilities were actually lacking or very poor.
3. Because they had traveled about a great deal and had lost several years in changing from school to school; or had come from a different system, as from England or Scotland.
4. Because, although more or less regular in their attendance, they had yet had so much illness that it had affected their progress in school.

The figures were gathered by a personal survey. Each grade was visited and the ages of the children determined by the roll book. It was assumed that the normal age for those entering the first grade was about six years, for the second grade about seven years, and so on up to the eighth, where the child should not be over fifteen when finishing this grade. As was said, when the backwardness was due to entering school late, or irregularity in attendance, or changing schools, these cases were not counted. Only those were counted who entered school at the usual time, and though they had been regular in attendance, yet had not been able to keep up with their classes, and had dropped back to the extent of three years.

After determining from the roll those who were three years behind the age that had been allowed for the grade, they were each questioned as to the age at which they entered school, if they had been absent frequently from illness, as to the reason why they felt that they could not pass their grades, etc. The Binet-Simon tests and the Knox-Healy tests were given to fifteen of the worst cases to determine the amount of mental retardation. In every case, the opinion of the teacher was obtained as to the general intelligence of the child. Thus, by consulting with the teacher and questioning the child, most of the cases of backwardness due to the before-mentioned normal causes were excluded. There is probably a very small percentage of error in the figures obtained.

It is obvious that this method of not counting the child backward until he is three years behind his grade does not give a fair estimate of the backward cases in the first and second grades. There, children are found who are backward and even feeble-minded, who have been in the grade for only one or two years. When such children were encountered, they were included, even though they had

been in the grades for only one or two years. Great care was used in selecting these cases, and only those were included who were undoubtedly dull and backward, and who the teacher declared would not pass the grade. Probably no child of this type was included



who will ever be able to pass the fifth grade, no matter how long he remains in school.

Twelve schools were visited, in which the aggregate attendance was 3631 pupils. Of this number, there were found 105 cases, or 2.9 per cent, who were three or more years behind their classes, and a few cases in the first and second grades who were obviously backward, but had been in school for one or two years only. Of the children examined, there were then about three per cent who were

unable to stand the test of mastering the school curriculum to the extent of passing from one grade to another in the average time. These are the same figures found by Mitchell in the Cleveland survey. He finds that 2077 children, "approximately 3 per cent of the school population, have been in the schools three or more years longer than the grade in which they are would indicate." And Goddard¹ states that 2 per cent of all the children attending the public schools are feeble-minded. The percentage of the backward children found in each class is seen in the curve. It shows that by far the greatest percentage occurs in the fifth grade. The reason for this is that the feeble-minded child can never do more than fifth grade work, and when he reaches this point in his school development, he sticks here and is unable to make further progress.

REASONS GIVEN BY TEACHERS FOR RETARDATION.

It is interesting to analyze these cases as far as possible and find out what is the cause of backwardness. The teachers, with a very few exceptions, gave three reasons for the condition:—

1. Laziness and lack of application.
2. That the child had been moving about from school to school.
3. The parents' lack of interest in the child's school work.

Now, although these causes may play some part in the retardation of the cases noted in the survey, they play only a minor part. A normal child, no matter how lazy he is, will manage to pass his grade in some fashion. He can usually absorb enough from the classroom to pass the minimum requirements. And if we find a child who is so unusual that he refuses to apply himself and fails to pass his grade year after year, then something is wrong and the child should have a mental examination to determine what is the trouble. All backward cases from the second cause were not included. The third reason given is not sufficient to prevent the child from mastering his school work, especially during the early grades where the work is done in the school and the child is not expected to get his lessons at home. Of course, if the parents are immoral, drunkards, and do not furnish the child with proper food and shelter, the child's work will suffer. But where we find terrible home conditions, as immorality, drunkenness, and extreme poverty in a town such as this, a prosperous well-to-do town of the middle west, it probably means that the parents are defectives, even feeble-minded, and the child also is probably not of normal mentality.

¹ Goddard, H. H. *Diagnosis of Feeble-mindedness*, read at Chicago Medical Society, June 2, 1913.

It is very hard for the teacher to admit that the child she has worked with so faithfully, and to whom she has probably become attached, is of subnormal mentality. Binet points out that the backward child is usually so quiet and well-behaved that the teacher feels quite kindly toward him, and does not like to admit that he is feeble-minded. Goddard¹ says that teachers and physicians have insisted that any child, no matter what his record, if he did not show certain stigmata of degeneration, certain conditions recognized as belonging to the imbecile, must come out all right. . . . "These children, besides being well-formed and pleasing to look on, are usually very affectionate, and we cannot believe that such children are incurably defective." Often the teacher will not admit any abnormality even in the face of overwhelming evidence. In one school, there was a girl, H. M., sixteen years and ten months old in the sixth grade. She had not passed the fifth grade, but she had been put in the sixth because she had been two years in the fifth. She was overgrown, well-developed sexually, good-looking, but dull. The teacher gave as a reason for her backwardness that her parents did not take a proper interest in her school work. It was found that she had entered school at six years and had been two years in every grade. She had not really passed even the minimum requirements of any of these grades, but had been pushed on automatically after two years. Her brother and sister had both had a similar history. Neither had managed to pass the fifth grade. The sister was a houseworker and the brother a farm hand. When the teacher was told of the record of the brother and sister, she replied, "That just shows how little interest the parents take in their children's work." The girl was undoubtedly a moron, who would never be able to pass the fifth grade work, and her defect was probably shared by the other members of the family. Her backwardness may be due to heredity.

I would classify the 105 cases under five heads. The classification, though not logical, is helpful:

1. Feeble-mindedness. Due to heredity and conditions at birth and early infancy.
2. Dulness. Due to same causes.
3. Backwardness. Due to some abnormality of the internal secretions.
4. Specialized defects.
5. Neuroses, preventing the child from adjusting himself to the school curriculum.

¹ Goddard, H. H. *Diagnosis of Feeble-mindedness*.

Of the 105 cases, 22, or 20 per cent, were placed under the first head, feeble-mindedness. This is .60 per cent of all children examined. This is smaller than the percentage given by Goddard and other observers. The percentage they give is between one and two per cent. This .60 per cent includes only the *obvious* cases that can be diagnosed by their history and a casual examination. Undoubtedly many of the cases classed under the heading dulness, if they were given a thorough mental examination, would be found to be feeble-minded.

By feeble-mindedness is meant a lack of mental capacity to develop into an adult with ability to "float" in society. Measured by the Binet-Simon standard, it means that the child will never develop beyond the mentality of a twelve-year-old child; that no matter how long the child goes to school, he will never be able to master more than fifth grade work. Of course, such children may occasionally be found in grades above the fifth, if it is the custom of the school authorities to push the child on to the higher grade, regardless of whether he has mastered the lower grade. Only five cases under the heading feeble-minded were given a mental test; the rest were cases that by means of their family history, their school history, their appearance, and a brief oral examination, were determined beyond any reasonable doubt to be feeble-minded.

The following is a list of these cases, giving a few facts from which the reader can draw his own conclusions.

1. First grade, age 9 years. Has been three years in the first grade. Keeps to himself on the playground, and does not join in play with the other children. Incontinence of urine during the day as well as at night. The child looks and acts "half-witted."

2. Kindergarten, age 5 years, 10 months. He does not talk, acts peculiarly. Teacher says the child is "foolish."

3. First grade, age 11 years. Four years in the first grade.

4. Second grade, age 12 years. Two years in the first and three years in the second grade. Cases 3 and 4 are brother and sister. Mother and father drink, teacher reports.

5. Sixth grade, age 16 years, 10 months. Two years in each grade. Brother was not able to finish grade, he is now a farm-hand. Sister left school after finishing the fifth grade, and is now a house-worker.

6. Second grade, age 11 years, 10 months. Has been five years in the first and second grades. He cannot learn numbers and cannot write legibly.

7. First grade, age 7 years. Although this boy is not three years behind grade, it is apparent from his appearance that he is

decidedly abnormal. The teacher cannot teach him to count. She calls him "half-witted."

8. Fourth grade, age 14 years. This child has repeated each grade. The principal reports that one brother is "half-witted."

9. Fifth grade, age 15 years, 10 months. Has repeated each grade, he looks stupid and has the thick slovenly speech so characteristic of the feeble-minded.

10. Sixth grade, age 16 years, 4 months. This case really does not belong in the sixth, but she was put here because she had been two years in the fifth. She has repeated all her grades.

11. Fifth grade, age 16 years, 2 months. Repeated every grade.

12. Fourth grade, age 14 years, 1 month. She started to school at the age of six, spent two years in the first, second, third, and fourth grades, and after two years in the fourth, she will not be able to pass it. This girl is good-looking, sexually well-developed, and with her poor mentality she must receive careful protection if she is to escape ruin.

13. Second grade, age 10 years, 9 months. Two years in the first and in the second grade and cannot yet pass the work. Teacher reports that both parents drink, and that the boy had a brother who could not pass the third grade after several years' work.

14. Second grade, age 10 years, 9 months. Two years in first grade and has been two years in the second grade and still cannot master the work sufficiently to pass on to the third grade. The report of the teacher is that "he is very dull and stupid." This boy has a brother nine years old in the second grade.

15. Second grade, age 11 years, 8 months. "Very dull and stupid" is the report of the teacher. A decided microcephalic.

16. First grade, age 11 years, 1 month. "He just cannot learn," says the class teacher. After four years in the first grade, he was placed in a special class where he is doing second grade work.

17. First grade, age 11 years, 8 months. After five years in the first grade without any progress, he was placed in a special class.

18. First grade, age 10 years, 2 months. After four years in the first grade without making any progress he was placed in a special class where he is doing about first grade work.

Cases 17 and 18 are brothers. Teacher reports that father is epileptic and mother is immoral and obviously incompetent mentally.

19. First grade, age 8 years, 1 month. After spending three years in the first grade without profit she was placed in the special class where she is doing about first grade work.

20. Second grade, age 13 years, 8 months. This boy was several years in the first grade, and was then placed in the special class, where he has been for three years doing about second grade work.

21. Second grade, age 11 years, 2 months. Four years in the first grade without progress, then placed in the second grade. Has been here for two years doing about second grade work. This girl is good-looking and is just beginning to develop sexually, lacking the proper inhibitions because of her poor mentality. Unless she is watched and directed with the greatest care a stormy future can be predicted for her.

22. Third grade, age 12 years. He spent two years in both the first and second grades, and has been two years in the third grade without absorbing enough knowledge to pass. Since the age of six, he has been in the habit of running away from home and staying away until late at night. If now his parents discipline him to make him remain off the streets, he runs away and stays until morning. He looks dull and stupid. He has a sister in the ungraded class and another sister did not have the ability to finish the eighth grade.

From the records of these cases, it is clear that these children are not receiving any good from the ordinary school curriculum and that some special work should be devised for them. A few of them have been placed in special classes, but the majority are still in the regular classes. Some are so bad that they should be sent to an institution where they can be properly cared for. Cases 17, 18, and 19 are obviously cases for an institution. They can never make their way in society, and if left alone they are bound to become public charges, the boys becoming criminals and paupers and the girls in many cases becoming prostitutes. Goddard¹ says "the feeble-minded are potential paupers, criminals, prostitutes, and drunkards—if we would go into the schools to-day and pick out those children and take care of them, we could bring it about that they would become happy and contented and partially useful persons." The frequency with which these cases commit crimes is too well known to need discussion.² The unfortunate part is that in most cases society takes no steps to help matters until the crime has been committed. School serves to keep these children off the streets, and beyond this it gives them little help.

When it is realized that one feeble-minded boy in a class can greatly retard the work of the class and take up a large amount of

¹ Goddard, H. H. *The Criminal Imbecile*.

² Since writing this article, Case 20 has been arrested and sent to an institution for burning a grocery store and later a barn.

the teacher's time that should be given to the other children, parents of normal children will be more eager to meet this problem of the feeble-minded in the schools.

The problem of the dull and backward cases is different from that of the definitely feeble-minded. The backward cases can maintain themselves in society, if they are given an education fitted to their needs and mentality. Their failure to grasp the material taught in the ordinary school shows clearly that they are not receiving the education they need. The ordinary curriculum may be all right for the ordinary child, but these children, backward and feeble-minded, get little benefit from it. They cannot grasp what the teacher is trying to teach them, and as a result they drop farther and farther behind their grades, and become discouraged with their almost constant failures. They hang on to their disagreeable tasks as long as the law compels them, and then drop out to fight life's battles without a training that has fitted them to make a living, and with a mentality below the average. In most cases, unless the environment is very simple, failure awaits these cases no less than it does the feeble-minded. The tragedy of these backward cases is that they could have been saved from social failure by the proper training.

But how shall we determine what kind of an education is needed for these cases? This should be determined by an expert psychologist who should give a thorough mental examination to each child to determine the mental status and what special abilities and disabilities the child has. The psychologist could not only determine the mental condition, but he could point out the work which the child is best fitted to do. It may be said that little time should be wasted with these cases, in teaching them the abstract subjects. All efforts should be placed on making the boy or girl an efficient worker in the world. Some of these children show a surprising amount of talent or skill in certain lines. For example, I saw a little boy of about twelve who had not been able to pass the second and third grades, but who could draw and paint so well that he had received a fifty-dollar prize in an art contest. He was just on the border line between feeble-mindedness and backwardness. But if he is educated along the line of his special ability and properly looked after, he can make a good living out of his drawing and painting. Others have great skill in making things, and this ability should be encouraged, and the child be allowed to devote himself to this work almost exclusively. Some have special abilities in music. The psychologist could prevent such cases from entering a profession that they are not fitted for. If the individual lacks the ability to

make quick decisions and is not able to make quick motor reactions, it is clear that he should not be, for example, a chauffeur.

Before this problem of the backward children in our schools can be properly handled, parents must have a better understanding of it. Every parent hates to admit that his child is not bright, and so in most cases he keeps the child in the regular classes as long as possible, and bitterly resents the placing of the child in a special room, or even the suggestion that he shall not receive the ordinary education that the other children are getting, but rather a special education that will fit him definitely for a job. The average parent is determined that his child is to have all the culture that is coming to him.

One of the cases under the second head of dulness illustrates this point. H. S. is an overgrown, rather dull-looking boy of 16 years and 9 months. He did so poorly in the seventh grade, failing to pass after two years, that he was placed in a special seventh grade. All of his brothers and sisters failed to go very far in school, but the parents are determined that this boy shall go through college, so the teacher reports. Frequently, the mother visits the school and wants to know why her boy is not advancing more rapidly. Of course, the boy is doing as well as he can with the mind that he has. He has a rather hang-dog look, and when asked why he did not get along better in his school work, he said, "Aw, I can't do arithmetic!" I asked him what he did like, and he said, with a perceptible brightening of his face, "Oh, I like to make things, tables and chairs and such things." I learned that the boy did very well in his work in wood and manual arts. He might be trained to become a cabinet-maker or something of the sort. Certainly he will never fulfil his fond parents' wishes by becoming a university man. His present work in school only serves to make him more and more discouraged with the whole business.

Parents would probably take the word of a trained psychologist regarding their child's mental condition and the need for special education much quicker than that of the teacher or principal. And if the principal wished to place the child in a special class and the parents objected on the ground that the child was of normal mentality, they could be referred to the psychologist, who could show them the mental tests given and the record of the child, and thus the impressions and judgment of the teachers and principals could be backed up by an authoritative mental examination.

Under the heading of "Backwardness due to some abnormality of the internal secretions" are included only three cases. It is realized that many, if not most, of the feeble-minded and backward

cases may be due to some abnormality of the internal secretions, especially of the thyroid and the pituitary glands; but we have included here only those cases that show *other signs of abnormality* of the internal secretions beside that of mental retardation.

31. First grade, age 9 years. Very fat and lazy, moves slowly and is very large for his age. There is probably some abnormality in the secretion of the pituitary gland.

32. Sixth grade, age 14 years, 6 months. This boy is five feet and ten inches in height, and weighs about 140 pounds. He is loose-jointed and has a shambling gait. He looks stupid and foolish. This is a case of overgrowth, almost of gigantism, and is due to some abnormality of the pituitary gland.

33. First grade, age 9 years. Dwarf, not three feet tall, stubby fingers, characteristic of some abnormality of the thyroid gland. Probably both thyroid and pituitary are affected.

These children require medical treatment which is expensive and prolonged. This could only be obtained at the clinic of some of the hospitals or medical schools in the large cities. And even there it is not certain that they would be benefited, though there is a good chance that they might be. Treatment consists in supplying them with the secretion which they lack, the secretion being obtained from the glands of the sheep or the ox.

Under the heading "Specialized Defects" are included those cases that are backward because of some special defect and not because of an all-round dulness. Seven cases are included under this head.

24. Second grade, age 10 years. This boy cannot read. He has been two years in the first grade and two years in the second grade, and his failure to pass has been due chiefly to his inability to read. His vision tested 20-20 (normal).

25. Fifth grade, age 14 years. This boy stutters badly, his retardation is due chiefly to his speech defect.

26. First grade, age 10 years, 4 months. This boy has a facial tic, and also is a bad stutterer. Retardation caused chiefly by this speech defect.

27. Fifth grade, age 14 years 2 months. Cannot do arithmetic. Has to do summer school work to pass the grade even after two years.

28. Sixth grade, age 15 years. This girl cannot learn arithmetic. She repeated second, third, fourth, and fifth grades. She was just passed along into the sixth, though she never passed the mathematics work of the fifth grade.

29. Third grade. This girl's chief difficulty is in grasping arithmetic. She is fair in her other studies.

30. Seventh grade, age 16 years 2 months. This boy repeated the first, second, and third grades. He cannot read as well as a child in the third grade, and he cannot do the spelling of the seventh or sixth grade. This defect in spelling is not an ordinary one. He seems to have little comprehension either in reading or spelling or writing of the sounds of the language. There is no defect in his hearing. For example, he spells:

Mosquito — musto
Horse — hrorse
Adjective — adjectiveably.

These words were given orally and he was made to repeat them before spelling them by writing them. In reading, we find the same defect. When he came to the word "enemy" he could not pronounce it. He was asked to spell it aloud. He did so, and then he pronounced it "enmy", and he could do better after his attention was called to the "e" in the word. This boy does fair work in his other studies.

All of these cases of specialized defects require careful study by a trained psychologist to determine what is the cause of the defect. Such cases are a burden to the teacher who breaks her patience day after day trying to teach the child something that he cannot learn. The stutterers should receive some special training that would help them to overcome their difficulty. There should be some provision made to find these cases of speech defect as soon as they begin, and not wait until they have become fixed in the life of the individual.

There were only three cases of neuroses found. There were undoubtedly more than these, but the brief survey did not discover them. By neurosis is meant a lack of mental adjustment, a mental conflict that prevents the child from moulding himself to the school routine. There is not lacking normal mental ability, but because of the lack of adjustment, the child is unable to use his mental powers to their full advantage. Perhaps stuttering should have been included under this head, for this is a neurosis caused in most cases by some mental conflict, but in the case of stuttering the neurosis shows itself through such a definite defect that we placed these cases under the heading of specialized defects. The three cases included under this head show no special symptom, but a general lack of adjustment.

34. Fourth grade, age 14 years, 4 months. Boy was reared in an orphanage. He does not know when he started to school; takes

no interest in his school work, and is a playground bully. He does not seem dull, but impresses one as having some mental conflict, and to lack adjustment. It is probably that his rearing has made him quite anti-social.

35. Fourth grade, age 12 years, 10 months. Teacher reports that this boy's mother is immoral. The boy has a shamed look all the time. He lacks interest in his studies. There is probably a mental conflict here due to home conditions that keeps the boy from giving his mind to his school work.

36. Third grade, age 11 years, 10 months. This boy has a facial tic and is very nervous and high-strung. The school routine is probably not adapted to his needs.

It is well to remember that the school routine is made for the average child, and there may be some whom the curriculum does not fit, even though they may have ordinary, and even above the ordinary, mentality. Are not school authorities inclined to act like Procrustes, who cut people off or stretched them out to fit his bed? I know of an individual who was never able to pass the fourth grade and who had to get her education in reading and observing and who is nevertheless splendidly educated, and quite capable of carrying on large affairs. The too hot and dry air of the school room, the hard and ill-fitting seats, the dull, uninteresting routine were more than her sensitive nervous system could stand. There was such a perpetual unrest that application to her studies was impossible.

All of these cases of neuroses require a careful mental analysis to discover the root of the conflict and as far as outside circumstances allow, to adjust the child's life so that good work is possible.

In every school system, there are from two to five per cent of the children who are not being educated, despite the best endeavors of the teachers. The reasons for this are not simple, but are quite complicated. The problem cannot be dismissed by saying that the child is lazy or that he receives no encouragement at home. Adequately to meet the problem of the backward and retarded child in the school requires the services of a trained psychologist, assisted at times by a competent neurologist who has had experience in dealing with neurotic and backward children. A psychological clinic should be a part of every school system that numbers as many as three or four thousand children. Such a clinic will really save money, for it will take a burden off the teachers and enable them to do more and better work with the normal children. The backward and feeble-minded should receive special training in special classes taught by specially trained teachers, the neurotic and those with specialized defects should be studied and given such treatment

as needed. Often the principal is convinced that the child has need of special training, but he has no authority to say that the child must be placed in a special class. If there were a trained psychologist to make the examination, the parents would be more likely to abide by the decision of the expert in mental examination. This mental testing should not consist of the Binet-Simon test alone, but should include as many other tests as may be necessary to form a decision concerning the child's mental ability in language and abstract subjects, as well as his motor control. In this way only can the backward and retarded children be saved from sure suffering and failure. A properly organized psychological clinic, and special classes for the training of the backward are as necessary for the school as is medical inspection.

CLINIC REPORTS.

IV.

Abel has very superior intelligence according to the Terman Revision of the Binet Scale, his I. Q. being 126, but his record upon certain of the so-called performance tests was rather poor.

The boy, who is about two months over five years of age, was brought to the Clinic by his mother, accompanying an older half-brother, who was to be examined. Certain tests were given him, and the performance soon became so interesting that Dr. Twitmyer declared he would be a very good case for the summer school. Hence his record was put into case form.

Almost no history is available about Abel, except what was obtained in the case of his half-brother. The mother's first husband was syphilitic, and the older boy who was brought to the Clinic is now on anti-syphilitic treatment. At the Clinic he was diagnosed as feeble-minded and institutional care was advised.

The second husband, the father of Abel, lived with the mother but a short time and then deserted.

Nothing in Abel's conduct has suggested any variation from the normal. From the remarks of social workers it was concluded that the mother is having some trouble in controlling him, and they expect him to get beyond her power before very many years have passed. The mother did not give the impression of being of strong mentality. Abel has not attended kindergarten, but expects to start school next fall.

His formboard record was satisfactory, in so far as the shortest trial was concerned, but the first trial was not well done. The cylinder test gave poor results, except that it showed his ability to learn from experience, for it was necessary to give him very minute instructions and much urging before he was finally successful. His work on the design blocks was perhaps his poorest performance, none of the trials being completed without some suggestions from the examiner. The Healy Completion Test was likewise a failure. But in the Binet tests he passed all of the five year tests, four of the six year, three of the seven year, and two of the eight year tests. Some of the results were rather surprising in view of the fact that he has had no formal training, and it is doubtful whether the home training has been up to the normal amount.

He may be said to be of the intellectual type, but memory and training seemed to be depended upon but little. His remarks while working on the Witmer Cylinders indicate this somewhat,—“This fatty goes in a big hole,” and “That one sticks up; it don't go there.” In naming the days of the week he seemed to be thinking out which one came next. At no time did he depend upon trial and error, except during periods when his attention wandered. This was his one main trouble. He did not have the persistence that is normal for his age, and it was difficult to hold his attention. Time after time the examiner thought the test would be a failure because the boy paid so little attention to instructions, yet after much rolling of the eyes and gazing about, he would do what was asked of him. He seemed to be giving no attention to the three commissions, yet he performed them quickly.

The diagnosis was superior mentality, with the recommendation that he be admitted to the summer school.

V.

Amos was thirteen years of age when he was brought to the Clinic by a social worker, who desired to know the mental status in order to determine his treatment. Dishonesty, truancy and running away from home had brought him under the care of an organization. On numerous occasions Amos had run away from home, staying away for a day and at least once for longer, and on one of these occasions he committed acts which he believes would get him into trouble were they known. His stealing from the school has been stopped by the principal.

He is a pale, expressionless boy, just above the minimum height for his age; a mouth breather. His head was injured at birth, which was instrumental. He was very delicate and had almost all the diseases that could fall to a child. Finally he was sent to a tuberculosis sanitarium, from which he was discharged fifteen months ago. His tonsils and adenoids were removed six years ago. Up to last spring he wore glasses.

There were ten children in the family, born within fourteen years. Five are living and all are said to be abnormal, the oldest, a girl, being particularly dishonest and retarded. The mother is thought to be of low intelligence and is said to be untruthful.

The home life has been unsatisfactory, due to poverty and to a lack of knowledge on the part of the parents as to the best methods of raising children. As a result, the boy has no real love for his parents. His physical condition and lack of home assistance have made him a misfit among children of his age.

Except for the two years he was under treatment for tuberculosis, he has kept up with his school work, being fair in everything but arithmetic. He does not like school.

The Binet tests (Stanford Revision) showed him to be about a year retarded, and other tests gave normal results. He fatigued quickly and frequently needed encouragement.

Amos is therefore of normal mentality, his physical condition entitling him to be a little behind his age. His thieving has been of the sort commonly found among boys of his age, and he has a complete recognition of the wrongness of his acts. His lack of love for his parents may quite easily be accounted for by their failure to bring it out. The running away has been accounted for as a result of fear of punishment. The lack of a normal outlet for his energies has further contributed to the direction of his conduct.

In view of the fact that his acts are not without reason, and there is no other evidence of deficient responsibility, the diagnosis was normal mentality with bad conduct, due to environmental factors. Eye, nose and throat examinations were recommended. It was considered advisable that he be placed upon a farm for six months to a year, the social worker having in mind such a farm where he can be under the guidance of a man who understands these problems.

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VI.

Last October Ezra was brought to the Psychological Clinic by his mother and a friend. Their physician had referred the boy for mental examination because of backwardness in school.

Ezra was fourteen years and four months old. His height, weight and head girth were normal. Physically he was a well developed boy, but his mother reported that he had never been well. Owing to her own ill health she had given him very little care during his first four years, and pleaded ignorance of many facts in his early life. Most mothers, whether or not they personally care for a child, know the state of his health, and his progress. Such a situation as this points to a lack of interest rather unusual in mothers. The information which she gave was that Ezra was not a healthy baby; he always had a blue look and was very slow in developing. He did not walk until four years, and did not even sit up alone until three and one-half years old. He began to talk at two years. When seven or eight months old he suffered from marasmus. Shortly after this he had enlarged glands in the neck, and between the ages of two and five had running ears.

At the time of his examination Ezra complained of both his eyes and ears, but his mother thought the matter of no importance. The boy tried to describe a "roaring sensation" which annoyed him, but could not make himself clear. Three years before this examination he had had several convulsions. His mother could throw no light on their character.

There was nothing significant about Ezra's birth. From the mother's report it was entirely normal, although she had been extremely nervous during her pregnancy. The boy had always been nervous, and had not commenced school until nearly nine years of age. Necessarily this gave him a severe pedagogical retardation, and he did not progress at the normal rate. He had never been graded in school. For a while he attended a parochial school, but at the time of his examination was not attending any school.

Socially Ezra was incompetent. Boys of his own age would not tolerate him. They poked fun at him and said he had a queer look. This was because he looked from the corners of his eyes; instead of fixating an object squarely in front of him, he would turn his head until he looked sidewise at the object. He allowed even younger boys to impose on him, and they tormented him because it was necessary for him to urinate frequently. Another factor against him was his inability to dress himself properly. Certainly no difficulty should be experienced in this direction by a fourteen year old boy.

Ezra did not come of healthy ancestry. His maternal grandmother died at seventy-six from an affection of the lungs following grippe. Two of her daughters died early in life from tuberculosis. Ezra's paternal grandfather died at the age of forty-two, and had been paralyzed for three years before that time. Ezra was an only child.

The qualitative and quantitative results of the examination showed clearly that in many respects Ezra was mentally inferior to boys of his age. His performance with the Witmer formboard was very poor. Four year old children have accomplished this test in less time than his shortest record of three trials. He made a complete failure with the Witmer cylinders. Another striking feature was his memory span of only four digits. A boy of fourteen should repeat at least six digits. In school subjects he could not do first grade work.

During the entire examination Ezra displayed very little initiative and alertness, although he was always willing to work. His persistence was good.

His rate of movement was slow, but his control of movement, complexity and coordination were normal. His cardinal defect was in imagination, and his imageability was far below normal. His analytic and distributive attention were exceedingly poor. It was difficult to make him understand what was required of him. His observation, planfulness and understanding were very poor. He displayed practically no intelligence—that is, no ability to solve a new problem.

The showing which Ezra made at the examination, combined with his poor school record and his inability to get along with boys of his own age, indicated a diagnosis of feeble-mindedness. The grade was given as low grade imbecile (Barr classification).

NATALIE A. BASSETT, A.M.
Graduate Student.

REVIEWS AND CRITICISM.

The Mentality of the Criminal Woman. By Jean Weidensall, Ph.D. Educa. Psychol. Monog. No. 14. Baltimore: Warwick and York, 1916. Pp. xx+322.

Professor G. M. Whipple, as editor of the series of monographs, contributes a preface in which he describes this book as "of prime importance to workers with mental tests and to practical penologists who seek to individualize punishment in such a manner as to meet the needs of the offender as well as the needs of the offence." No student of clinical psychology, moreover, can afford to miss it.

An introduction by Dr. Katherine Bement Davis outlines the history of the Laboratory of Social Hygiene in the New York State Reformatory for Women at Bedford Hills, N. Y., where most of Dr. Weidensall's work was done. "The problem," explains Dr. Weidensall, "grew out of her (Dr. Davis's) conviction that women proved guilty of crime might be more wisely sentenced than was possible under existing conditions. Altogether it seemed that the devise of some method for making an early and reasonably certain estimate of the criminal woman's reformability was as vital an issue as was presenting itself to those who were dealing with her. . . . The determination of such a body of tests was, of course," she continues, "an uncertain undertaking. . . . No one seemed altogether sure of what constituted reformation. . . . We set for ourselves the following arbitrary standard: if an individual has the capacity to learn a trade, to be industrially self-supporting, and is intelligent and stable enough to adapt herself to ordinary social and industrial conditions, she is worthy the chance of reformation. Whether a body of tests were discoverable that would establish the possession of these virtues was in itself problematical. . . . In the last analysis, without norms for the law-abiding woman's mentality, of her earning capacity, of the amount and kind of training she has had, together with some data respecting the character of her home conditions, we should not be in a position to assume with any assurance on the basis of any tests whatsoever, how far a given individual who had not been law-abiding varies from, and may be expected to approximate to, normal conditions and prove reformable.

"We had chosen a series of tests and had succeeded in testing with them a small group of expert college maids," says Dr. Weidensall, "when to our good fortune matters were greatly expedited by the discovery that the norms and data we so much needed were being in large part formulated by the Bureau of Vocational Guidance . . . in Cincinnati under the direction of Dr. Helen Thompson Woolley. . . . The application of these tests to the Reformatory women constitutes the major portion of this monograph.

"The total list of our subjects' scores," Dr. Weidensall remarks, "have been included in this monograph. They constitute a scale representative of an average and typical hundred criminal women who have been sentenced to a reformatory. The complete list of the Maid's records is also given." Of the hundred women tested, eighty-eight were used in the percentile tables and curves, and twelve foreign women were omitted because they had little facility in the English language.

The standard tests which were given are:

Physical tests.—(1) Height; (2) Weight; (3) Strength of Grip; (4) Steadiness of hand; (5) Rapidity of movement and indexes of fatigue.

Mental tests.—(6) Card sorting; (7) Cancellation of the letter a; (8) Memory span and the per cent of 7, 8, and 9 numbers remembered; (9) Substitution, (10) Completion of sentences; (11) Association by opposites. Besides these the series already in use in the Bedford laboratory was given to this group, including,—(1) Woodworth and Wells' cancellation of numbers; (2) Binet's memory for number series; (3) Facility and character of handwriting checked in terms of Ayers' and Thorndike's measuring scales and correlated with Binet age; (4) (a) Rate and character of reading, correlated with Binet age; (b) number of ideas recalled; (5) (a) Woodworth and Wells' standard directions tests, easy and hard; (b) two new verbal directions tests; (6) Ability to tell time, correlated with Binet age; (7) Healy-Fernald tests (a) cross line A and B and the code, correlated with Binet age, (b) Construction A and B; (8) Formation of new motor habits, mirror drawing test as described by Whipple.

In Chapter III, *Experimental Data and Results*, Dr. Weidensall presents tables and graphs for the total group of Bedford women, the total group of Cincinnati children, various subgroups of Bedford women and Cincinnati children classified according to school progress, and finally for the eighteen efficient College Maids. The results of the two new verbal directions tests are not included. "It may be affirmed, however," says Dr. Weidensall, "that they bid fair to be useful. . . . They serve to isolate with considerable finality those who are slow to comprehend simple, every-day directions."

Among the conclusions reached, the most important is that "Approximately 40 per cent of the Bedford 88 are decidedly less efficient in whatever these tests measure than is the average Cincinnati working girl of fifteen. . . . It may also be affirmed that about 33.3 per cent of the Bedford 88 are at least as intelligent and as efficient in whatever these tests measure as is the average Cincinnati working girl of fifteen."

"Even the more intelligent third of the Reformatory subjects differ very obviously and unmistakably in stability and emotional control from the group of Maids. The Maids are more self-contained; they constantly employ more mature judgment in the conduct of their affairs. They are more consistent in their aims and evaluation of themselves and their work. They are without the superstitiousness and egoism of the general run of Reformatory subjects. To most of them it was a simple matter to explain what the tests were for and to secure their co-operation. They were glad to do their best and were quite free from self-consciousness. The Reformatory women, on the other hand, unless they were tested during quarantine, as the Bedford 88 were, when there was no one to mislead them, demanded elaborate and often repeated explanations of the need to do their best, of what the tests were for, etc."

Dr. Weidensall believes that "the success the institution has had in reforming so many of its charges has been due to a variety of things, among which two stand out most clearly. In the first place, it has been due to the skill, patience, and persistence with which even the dumbest inmate has been taught better habits of work and play. In the second place, the capacity of this type of woman for personal devotion has been appreciated and fostered. . . . On the whole, she concludes, "two-thirds of them are tractable and responsive and some appreciable number of them at least, other things being equal, may be trained to be efficient and be taught a reasonable measure of self-control. Perhaps this would be true for more of them, if their sentences were longer. As this work has proceeded the writer has felt increasingly sure that it would have been true for a much higher per cent if each girl could be put through a

careful examination in a clearing-house at the time of her first offense, sentenced in accordance with her needs and capacities, and then have been followed up until each had received the discipline and the training found to be essential to the development of her self-control, industrial efficiency, and good citizenship."

A. T.

Psycho-motor Norms for Practical Diagnosis, a study of the Seguin Formboard.

By J. E. Wallace Wallin. Psychol. Monog. No. 94, August, 1916. Princeton, N. J.: Psychol. Review Co. Pp. v+102, plates.

This monograph purports to have come out of its author's "keen realization that no thoroughly satisfactory normal norms were in existence for the modified Seguin formboard." What this formboard is, Dr. Wallin does not tell us. He refers to his "conviction that the Seguin formboard, as modified by Norsworthy and Goddard, is one of the most valuable pieces of apparatus in the entire armamentarium of the psycho-clinician." Immediately below these words he prints a diagram labelled, "The Modified Seguin Formboard." If the drawing is accurate in its proportions, and represents the formboard used in Dr. Wallin's investigation, it is neither the formboard of Norsworthy nor that of Goddard. Dr. Norsworthy's formboard was constructed by Dr. J. H. Bair. It was smaller than the standard formboard used by Dr. Sylvester, its blocks were provided with handles, and instead of the star and cross it had a hexagon and an octagon. Dr. Goddard made the board self-correcting, that is, he changed the proportions of the figures so that no block would fit into any recess but its own. In the diagram shown by Dr. Wallin the square will go into the circle, rectangle, or hexagon, and the diamond also will go into the hexagon. Therefore it cannot be the Goddard formboard.

Still less is it the formboard used by Sylvester, as will be obvious from a comparison of this drawing with that which appears on page one of his monograph, "The Formboard Test" (Psychol. Monog. No. 65, 1913). If the facts are as they seem, it is hardly permissible to compare the results obtained by different methods with different pieces of apparatus, in the way Dr. Wallin compares them.

Many studies of the formboard have been made since Dr. Wallin's monograph was completed for publication, and many more are under way, using an improved type of board and applying a more analytic method to the treatment of results. What place Dr. Wallin's work will take in the series will be seen within the next few years.

A. T.

The Causation and Treatment of Psychopathic Diseases. By Boris Sidis, A.M., Ph.D., M.D. Boston: Richard G. Badger, 1916. Pp. 418.

When we see Dr. Sidis heralded by his publisher as the discoverer of "the fundamental cause of psychopathic maladies," we infer that Dr. Sigmund Freud has a rival. Freud in his day was hailed as a discoverer, and he too put forward one cause, albeit a different one, to which he would reduce all cases of functional mental disorder. Dr. Sidis is unkind enough to allude to psycho-analysis as "Freudian twaddle," but what the Viennese psychiatrist would think of Dr. Sidis we can faintly imagine. That each of these gentlemen has found only one source for the infinite variety of psychopathic aberrations, may give us reason to regard them both with the same doubt.

Dr. Sidis' chief law is fear. He bases his argument upon the resemblances between the physiological accompaniments of the emotion of fear and

the symptoms of psychopathic disease. He maps out no less than fourteen principles by which the fear instinct operates to cause psychopathological states, and cites an immense number of cases in illustration. If these cases were accompanied by an account of the treatment, in so far as it concerned measures other than medical, they might be worthy of the credence we should like to place in them.

As it is, the book will hardly be impressive either to practicing neurologists or to psychologists interested in mental disease, though perhaps it may prove a treasure-house of symptoms for the delectation of the idle contingent who are on their way to becoming nervous invalids.

A. T.

NEWS AND COMMENT.

Portland, Oregon, to entertain the N. E. A.

For the first time in its history the National Education Convention is this year to be held in the Northwest. The association will meet at Portland, Oregon, July 7 to 14th. The United States Weather Bureau says that Portland has the best summer climate in the United States. It is rare that the thermometer in that city climbs above 75 degrees in summer, and always the people of the state of Oregon sleep under blankets. Summer days are bright and warm. Oregon gets its rain in winter.

Portland makes a fine base for a summer of sight-seeing in the Northwest. It is close to the seashore, while within a few hours travel are Mt. Adams, Mt. St. Helens and famous Mt. Hood. To the north are Ranier National Park, easily reached in a day by automobile, the Georgian Circuit around Puget Sound, Snoqualmie Falls, Victoria, and Vancouver. Portland's saw mills and ship building yards are to be open to visitors. During the convention the committee will hold the annual Rose Carnival for the benefit of visiting teachers. Good hotel rates are guaranteed by the Portland General Committee, of which Superintendent L. R. Alderman is chairman. Room reservations should be made to the Portland General Committee, Mark Woodruff, Secretary, or through the Chamber of Commerce of that city.

Portland, Oregon, is already organized with a view to making the 1917 session of the National Education Association the most successful in its history. It is the ambition of Superintendent Alderman to identify the interests of the thousands from East, South, and Middle West with those of the people of the Northwest. Mr. Alderman is planning committees on joint excursions over the Columbia Highway, through Oregon's big timber and along the crest of mountains overlooking the beautiful lake region. Excursions also will be made to the various state educational institutions that are rapidly coming to the front rank.

The University of Oregon has announced that its summer school will run three weeks before, and three weeks following the N. E. A. Oregon Agricultural College, the Oregon Normal School, the University of Washington, the University of Idaho, the three Washington Normal Schools and two Idaho Normal Schools, all with summer sessions, surround Portland on the various railway lines entering the city. Some of the historic endowed colleges, such as Whitman, and Willamette, and the new but famous Reed College, will join the state institutions in vying for the opportunity to welcome the visitors, and to profit by the coming of the nation's educators to Oregon. The N. E. A. will come in

July in time to assist in the celebration of the completion of one of the greatest bridges in the world, the interstate span connecting Oregon and Washington at Vancouver, and forming a link in the Pacific Highway, connecting Seattle, Portland and San Francisco.

Leading Educators Organize for Physical Training in Public Schools.

Adopting as its slogan President Wilson's recent statement that "physical training is needed but can be had without compulsory military service," a committee of leading educators has been formed to urge the adoption, in the various states, of a model state bill, drafted by Dr. Dudley A. Sargent of Harvard, providing for the introduction of physical training, without military features, in the public schools. The new committee, which bears the title of "The Committee for Promoting Physical Education in the Public Schools of the United States," has opened headquarters in the Munsey building in Washington, D. C., with Mrs. Harriet P. Thomas as secretary in charge.

In its announcement the committee says, in part: "We believe that the time has come when the public schools can, and should, enter deliberately and purposefully upon a definite plan for the preparation of our youth physically for the exigencies of life and for all the demands of citizenship. We need to spend more money and more time upon physical training intended to develop the body so that both boys and girls may be prepared equally for the pursuits of peace or the vicissitudes of war."

The bill is officially entitled "a bill to upbuild national vitality through the establishment of physical education and training in the public schools of the state." It is described as a tentative draft which may be easily modified to meet the varying financial and educational conditions in the different states. Its proponents are careful to assert that they are not intending to impose an "elaborate and expensive machinery" upon any state,—merely to indicate the way to begin in the belief that public opinion has now been educated to the point where it will support physical training in the schools when that training is shorn of military features.

The bill, with suitable modifications, has been introduced in the Massachusetts General Assembly (by special consent) and in the legislatures of California and Indiana. Its introduction in other states is expected to follow shortly.

A Correction.

On page 233 of the January number of *THE PSYCHOLOGICAL CLINIC* occurs a statement concerning the treatment of feeble-minded women in New York State. This statement is included in a clinical lecture given by me and reported by the Recorder of the Psychological Clinic. A graduate student, a member of the class to which I was lecturing, made this statement, or something like it, and the Recorder, through a misunderstanding, reported it as part of my lecture. I have the best of reasons for believing the facts not to be true, as Dr. Ethan A. Nevin, of the State Custodial Asylum at Newark, N. Y., writes me that they are very far from representing the true situation. I regret to say that I did not notice the statement until my attention was called to it by Dr. Nevin.

LIGHTNER WITMER.

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